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| Space Systems Environmental Interactions Technology   | 0603410F | 321   |
| Space Technology                                      | 0602601F | 137   |
| Space Test Program                                    | 0605864F | 981   |
| Spacelift Range System                                | 0305182F | 1,411 |
| SPACETRACK  | 0305910F | 1,519 |
| Special Operations Forces                             | 0404011F | 1,623 |
| Specialized Undergraduate Pilot Training              | 0604233F | 659   |
| Submunitions  | 0604604F | 767   |
| Support Systems Development                           | 0708611F | 1,653 |
| Tactical AIM Missiles                                 | 0207161F | 1,087 |
| Tactical Terminals                                    | 0305158F | 1,381 |
| Target Systems Development                            | 0604258F | 925   |
| Test and Evaluation Support                           | 0605807F | 957   |
| Theater Air Control Systems                           | 0207412F | 1,129 |
| Theater Battle Management (TBM) C4I                   | 0207438F | 1,157 |
| Theater Missile Defenses                              | 0208060F | 1,223 |
| Threat Simulator Development                          | 0604256F | 913   |
| Titan Space Launch Vehicles                           | 0305144F | 1,375 |
| USAF Modeling and Simulation                          | 0207601F | 1,191 |
| Variable Stability In-Flight Simulation Test Aircraft | 0604237F | 589   |
| Wargaming and Simulation Centers                      | 0207605F | 1,199 |
| Weather Service                                       | 0305111F | 1,333 |
| Weather Systems Technology                            | 0603707F | 353   |
| Wideband MILSATCOM (Space)                            | 0603854F | 551   |
| WRM-EQUIPMENT/SECONDARY ITEMS                         | 0208031F | 1,217 |
| WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM                | 0303150F | 1,289 |

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**Fiscal Year 2001 Budget Estimate Submission  
RDT&E Descriptive Summaries, Volume III  
February 2000**

**INTRODUCTION AND EXPLANATION OF CONTENTS**

1. (U) GENERAL. This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT&E) program elements and projects in the FY2001 President's Budget Submission (PB). All formats in this document are in accordance with the guidelines of the DoD Financial Management Regulation, Volume 2B, Chapter 5 with the exception of the R-3 exhibit. The Air Force could not support the format matrix because our programs do not track their programs in the manner required to complete the exhibit.

- a. Contents: Exhibits R-2, R-2a and R-3 provide narrative information for all RDT&E program elements and projects within the USAF FY 2001 RDT&E program except the classified program elements. The formats and contents of this document are in accordance with the guidelines and requirement of the Congressional committees insofar as possible. The F-22 "P-5" budget exhibit directed by the Authorization Conference Report number 106-371 has been inserted behind the R-3 exhibit for program element 0604239F.
- b. The "Other Program Funding Summary" portion of the R-2 includes, in addition to RDT&E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.
- c. The Justification book has been assembled in accordance with DoD Financial Management Regulation 7000.14, Vol. 2B Cpt 5, Sec 050302 with the exception of the R-1; Project Funding Listing which was distributed under a separate cover due to classification.

2. (U) CLASSIFICATION.

- a. All exhibits contained in Volumes I, II and III are UNCLASSIFIED. Classified exhibits are not included in the submission due to the level of security classification and necessity of special security clearances.

PROGRAM ELEMENT COMPARISON SUMMARY  
INTRODUCTION AND EXPLANATION OF CONTENTS

| <b>Program Element</b>   | <b>Remarks</b>   |
|--|--|
| <b>BUDGET ACTIVITY 1: BASIC RESEARCH</b>                       |  |
| <b>BUDGET ACTIVITY 2: APPLIED RESEARCH</b>                     |  |
| 0602202F, Human Effectiveness Applied Research                 | Project 6219 was terminated after FY 1999, but Congress added funding in FY 2000.  |
| 0602269F, Hypersonic Technology Program                        | Project 1025 funding for this program in FY01 is contained in PEs 060203F Aerospace Propulsion, 0603203F Aerospace Propulsion Subsystems Integration and 0603216F Aerospace Propulsion and Power Technology.                                     |
| 0602601F, Space Technology                                     | Project 1011 all rocket propulsion efforts will be transferred to 0602203F, Project 4847. Project 3326 all lasers and imaging efforts will be transferred to PE 0602605F, Projects 4866 and 4867.  |
| 0602605F, Directed Energy Technology                           | Projects 4866 and 4867 were transferred from PE 0602601F.  |
| 0602702F, Command, Control and Communications                  | Project 4506, Surveillance Technology will be transferred to Project 4594, PE 0602702F and Project 7622, PE 0602204F beginning in FY01.  |
| <b>BUDGET ACTIVITY 3: ADVANCED TECHNOLOGY DEVELOPMENT</b>      |  |
| 0603726F, Aerospace Information Technology Systems Integration | In FY 2001, the efforts in Project 632863, Integrated Photonics, will be conducted in PE 0603203F, Project 63665A. Prior to FY 2001, the efforts in Project 634850, Collaborative C2, were performed in PE 0603253F, Projects 632735 and 63666A. |
| <b>BUDGET ACTIVITY 4: DEMONSTRATION AND VALIDATION</b>         |  |
| 0603441F, Space Based IR Arch (Dem/Val)                        | SBIRS Low efforts performed in Project 0007 will be transferred to PE 0604442F, Project 4598 in FY00 and 01.   |
| 0603800F, Joint Strike Fighter                                 | Project 2025 will complete in FY01.  |

**PROGRAM ELEMENT COMPARISON SUMMARY**  
**INTRODUCTION AND EXPLANATION OF CONTENTS**

| <b>Program Element</b>  | <b>Remarks</b>  |
|---|---|
| <b>BUDGET ACTIVITY 4: DEMONSTRATION AND VALIDATION Continued</b>    |   |
| 0603854F, Wideband Milsatcom  | Project 4870 is a FY01 new start.   |
| 0603856F, Air Force/NRO Partnership                                 | Project 4782, the Air Force/National Program Cooperation (AFNPC) effort is a FY01 new start.                                |
| 0603859F, Pollution Prevention                                      | Project 4852, Pollution Prevention will be transferred from PE 0605854F, previously in Budget Activity 6 beginning in FY01. |
| <b>BUDGET ACTIVITY 5: ENGINEERING AND MANUFACTURING DEVELOPMENT</b> |   |
| 0207249F, Precision Attack Systems Procurement                      | Project 2693 is a FY01 new start.   |
| 0604012F, Joint Helmet Mounted Cueing System                        | Project 4789 the Joint Helmet Mounted Cueing Systems effort is a FY01 new start.  |
| 0604201F, Integrated Avionics Planning and Development              | Project 2257 will complete in FY01.   |
| 0604270F, EW Development  | Project 8462 is a FY01 new start.   |
| 0604602F, Armament Ordnance Development                             | Project 3133 will complete in FY01.   |
| 0604327F, Hardened Target Munitions                                 | Project 4641 will complete in FY00.   |
| 0604617F, Agile Combat Support                                      | Project 2895 will complete in FY01.   |
| 0604706F, Life Support System                                       | Project 412A, the K-36/3.5A Ejection Seat effort is a FY01 new start.   |
| 0604754F, Joint Tacital Information Distribution System             | Project 4749, the Air Defense System Integrator effort is a FY01 new start  |
| 0604851F, ICBM  | Project 4210 completes in FY00.   |
| <b>BUDGET ACTIVITY 6: MANAGEMENT AND SUPPORT</b>                    |   |
| 0604256F, Threat Simulator Development                              | Project 3321, Joint Modeling and Simulation System (JMASS) funding and responsibility transferred in FY00 to PE 0207601F.   |

PROGRAM ELEMENT COMPARISON SUMMARY  
INTRODUCTION AND EXPLANATION OF CONTENTS

| <b>Program Element</b>                                     | <b>Remarks</b>  |
|--|---|
| <b>BUDGET ACTIVITY 6: MANAGEMENT AND SUPPORT Continued</b> |   |
| 0604256F, Threat Simulator Development                     | Project 7500, Foreign Materiel Acquisition and Exploitation (FMA/E) established a funding line in FY00.   |
| 0605808F, Development Planning                             | PE terminated in FY00.  |
| 0604759F, Major T&E Investment                             | Project 4759, two I&M projects started in FY00: Modeling & Simulation T&E Resources (MASTER); and Seeker T&E.   |
| 0604759F, Major T&E Investment                             | Project 4759, the Advanced Range Telemetry Integration (ARTM) was developed by CTEIP (OSD PE 0604940D). The ARTM I&S (Integration and Support) funding in this PE begins in FY01. Integrates the OSD developed ARTM into the Edwards AFB range. |
| 0605854F, Pollution Prevention                             | Program moved into Budget Activity 4, to PE 0603859F beginning in FY01.   |
| <b>BUDGET ACTIVITY 7: OPERATIONAL SYSTEM DEVELOPMENT</b>   |   |
| 0101120F, Advanced Cruise Missile                          | Project 4798, the AGM-129A Advanced Cruise Missile Service Life Extension Program effort is a FY01 new start.   |
| 0207133F, F-16 Squadrons                                   | Project 2671, the Automated Ground Collision Avoidance system, Falcon Star, and Targeting Pod/HARM Targeting Systems efforts are FY01 new starts.   |
| 0207141F, F-117A Squadrons                                 | Project 3956, the F-117 Enhanced GBU-27 effort is a FY01 new start.   |
| 0303140F, Information Systems Security Program             | Project 4585, Cryptologic 2020, will be funded under PE 33401F, Comm Sec, Project 4861, Cryptologic 2020, beginning in FY01.  |
| 0303601F, Milsatcom Terminals                              | Project 2487, the Airborne Wideband Terminal and Ground Multiband Terminal effort are a FY01 new start.   |
| 0305205F, Endurance Unmanned Aerial Vehicles               | Project 4883 is a FY01 new start. Project 4816 will merge into 4799 in FY00.  |

PROGRAM ELEMENT COMPARISON SUMMARY  
INTRODUCTION AND EXPLANATION OF CONTENTS

| Program Element   | Remarks   |
|---|---|
| BUDGET ACTIVITY 7: OPERATIONAL SYSTEM DEVELOPMENT Continued |   |
| 0305206F, Airborne Reconnaissance System                    | Project 4882 is a FY01 new start.   |
| 0305207F, Manned Reconnaissance system                      | Project 4820 will be transferred to PE 0305202F beginning in FY01.  |
| 0305910F, Spacetrack  | Project 4791, the Ground-Based Electro-Optical Deep Space Surveillance Sustainment effort is a FY00 new start.                                |
| 0401115F, C-130 Airlift Squadrons                           | Project 4885 is a FY01 new start.   |
| 0401130F, C-17 Aircraft                                     | Project 4886 is a FY01 new start.   |
| 0404011F, Special Operations Forces                         | Project 4860 is a FY01 new start.   |
| 0708612F, Computer Resources Support Improvement Program    | FY01 funding was moved to this PE from PE 0708611F, Project 67309.  |
| 1001018F, NATO Joint Stars                                  | Project 0002, the Project Definition of NATO Advanced Trans Atlantic Radar Project effort is a FY01 new start pending Congressional approval. |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |  |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                             |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |  | 0303150F WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM |                  |                  |                  |                  |                  |                  |                  | 674667     |               |
|   |  | FY 1999 Actual                                  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674667  | Global Command and Control System - AF | 12,235  | 3,817            | 3,743            | 3,829            | 3,942            | 4,022            | 4,100            | Continuing       | TBD        |               |
|   | Quantity of RDT&E Articles             | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>Note 1 : Funds in FY 1999 were realigned to PE 0303150F and the new program title became Global Command and Control System (GCCS). This is an effort to consolidate and centralize accounting for the AF GCCS program, which is now the operational system of record.</p> <p>Note 2 : Beginning in FY 2000, funding for Deliberate and Crisis Action Planning and Execution Segments (DCAPES) are to be submitted as a separate project (674802) under PE 27438. For administrative purposes, FY 1999 DCAPES funds were executed under project 4667.</p> <p>(U) <b>A. Mission Description</b></p> <p>The Global Command and Control System (GCCS) is the designated Command and Control migration system for the DoD. It is an integrated Command, Control, Communications, Computer, and Intelligence (C4I) system capable of supporting all echelons of the US military command structure. GCCS solves C4I interoperability problems between Service components by establishing a Defense Information Infrastructure (DII) Common Operating Environment (COE), and has an end objective to eliminate stovepipe systems. The AF is responsible for developing four of the modules that will make up the COE, and integration of AF unique applications with the COE.</p> <p>(U) <b>FY 1999 (\$ in Thousands)</b></p> <p>(U) \$3,607 GCCS Migration Support /COE Development</p> <p>(U) \$5,986 Crisis Action Planning Evolution</p> <p>(U) \$2,642 Prototype software development</p> <p>(U) \$12,235 Total</p> <p>(U) <b>FY 2000 (\$ in Thousands)</b></p> <p>(U) \$983 COE Development</p> <p>(U) \$1,851 GCCS Migration Support</p> <p>(U) \$983 COE Distribution</p> <p>(U) \$3,817 Total</p> |  |   |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 674667

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Exhibit R-2 (PE 0303150F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   | DATE | February 2000 |
|---|---|------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE                             |      |               |
| 07 - Operational System Development                 | 0303150F WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM |      |               |
|   | PROJECT 674667                                  |      |               |

| <b><u>A. Mission Description Continued</u></b>            |   | <b><u>FY 1999</u></b> | <b><u>FY 2000</u></b> | <b><u>FY 2001</u></b> | <b><u>Total Cost</u></b> |
|---|---|-----------------------|-----------------------|-----------------------|--------------------------|
| (U)   | FY 2001 (\$ in Thousands)   |                       |                       |                       |                          |
| (U)   | \$944 COE Development   | 13,137                | 3,929                 | 3,777                 | TBD                      |
| (U)   | \$1,854 GCCS Migration Support  | 13,675                | 3,929                 |                       |                          |
| (U)   | \$945 COE Distribution  |                       |                       |                       |                          |
| (U)   | \$3,743 Total   |                       |                       |                       |                          |
| <b><u>B. Budget Activity Justification</u></b>            |   |                       |                       |                       |                          |
| (U)   | This effort is Budget Activity 7, Operational System Development, because the program develops and implements software for an operational computer network. |                       |                       |                       |                          |
| <b><u>C. Program Change Summary (\$ in Thousands)</u></b> |   |                       |                       |                       |                          |
| (U)   | Previous President's Budget (FY 2000 PBR)   |                       |                       |                       |                          |
| (U)   | Appropriated Value  |                       |                       |                       |                          |
| (U)   | Adjustments to Appropriated Value   |                       |                       |                       |                          |
|   | a. Congressional/General Reductions   | -538                  | -91                   |                       |                          |
|   | b. Small Business Innovative Research   | -408                  |                       |                       |                          |
|   | c. Omnibus or Other Above Threshold Reprogram   | -2,369                | -21                   |                       |                          |
|   | d. Below Threshold Reprogram  | 1,943                 |                       |                       |                          |
|   | e. Rescissions  | -68                   |                       |                       |                          |
|   | f. Other  |                       |                       |                       |                          |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |                       |                       | -34                   |                          |
| (U)   | Current Budget Submit/FY 2001 PBR   | 12,235                | 3,817                 | 3,743                 | TBD                      |
| (U)   | <b><u>Significant Program Changes:</u></b>  |                       |                       |                       |                          |
|   | N/A   |                       |                       |                       |                          |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |   |          |          |          |                |          |          |            |
|---|---|---|----------|----------|----------|----------------|----------|----------|------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                             |          |          |          | DATE           |          |          |            |
| 07 - Operational System Development                 |   | 0303150F WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM |          |          |          | February 2000  |          |          |            |
|   |   |   |          |          |          | PROJECT 674667 |          |          |            |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  |   |          |          |          |                |          |          |            |
|   |   | FY 1999   | FY 2000  | FY 2001  | FY 2002  | FY 2003        | FY 2004  | FY 2005  | Total Cost |
|   | Actual  | Estimate  | Estimate | Estimate | Estimate | Estimate       | Estimate | Estimate |            |
| (U)   | AF RDT&E  |   |          |          |          |                |          |          |            |
| (U)   | Other APPN  | 4,436   | 5,672    | 14,753   | 15,083   | 15,365         | 21,617   | 22,011   | Continuing |
| (U)   | E. Acquisition Strategy   |   |          |          |          |                |          |          | TBD        |
|   | Electronics Systems Center (ESC), Hanscom AFB, MA will manage the overall AF GCCS program (Common Operating Environment (COE) and Crisis Action Planning Evolution) development. The COE development is being performed in-house to support AF contributions to the Joint service GCCS program and to support AF mission applications that utilize the COE. |   |          |          |          |                |          |          |            |
| (U)   | F. Schedule Profile   |   |          |          |          |                |          |          |            |
|   |   | FY 1999   |          | FY 2000  |          | FY 2001        |          |          |            |
|   |   | 1   | 2        | 3        | 4        | 1              | 2        | 3        | 4          |
| (U)   | COE Development   |   |          |          |          |                |          |          |            |
| (U)   | Multi-Media   | *   | *        | *        | *        | *              | *        | *        | X          |
| (U)   | Distributed Computing Services  | *   | *        | *        | *        | *              | *        | *        | X          |
| (U)   | Office Automation   | *   | *        | *        | *        | *              | *        | *        | X          |
| (U)   | Management Services   | *   | *        | *        | *        | *              | *        | *        | X          |
|   | * Denotes Completed Event   |   |          |          |          |                |          |          |            |
|   | X Denotes Planned Event   |   |          |          |          |                |          |          |            |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                   |                |                |                |                |                  |              | DATE           | February 2000 |
|--|---|---|-------------------|----------------|----------------|----------------|----------------|------------------|--------------|----------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                             |                   |                |                | PROJECT        |                |                  |              |                |               |
| 07 - Operational System Development                |   | 0303150F WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM |                   |                |                | 674667         |                |                  |              |                |               |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |   |                   |                |                |                |                |                  |              |                |               |
| (U)  | Common Operating Environment (COE) Development                                  | FY 1999   | FY 2000           | FY 2001        |                |                |                |                  |              |                |               |
| (U)  | Crisis Action Planning Evolution  | 3,607   | 983               | 944            |                |                |                |                  |              |                |               |
| (U)  | GCCS Migration Support  | 5,986   |                   |                |                |                |                |                  |              |                |               |
| (U)  | Prototype software development  | 2,642   |                   |                |                |                |                |                  |              |                |               |
| (U)  | GCCS Migration Support  |   | 1,851             | 1,854          |                |                |                |                  |              |                |               |
| (U)  | COE Distribution  |   | 983               | 945            |                |                |                |                  |              |                |               |
| (U)  | Total   | 12,235  | 3,817             | 3,743          |                |                |                |                  |              |                |               |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |   |                   |                |                |                |                |                  |              |                |               |
| (U)  | <u>Performing Organizations:</u>  |   |                   |                |                |                |                |                  |              |                |               |
|  | <u>Contractor or</u>  | <u>Contract</u>                                 | <u>Performing</u> | <u>Project</u> | <u>Budget</u>  | <u>Budget</u>  | <u>Budget</u>  | <u>Budget to</u> | <u>Total</u> | <u>Program</u> |               |
|  | <u>Government</u>   | <u>Method/Type</u>                              | <u>Activity</u>   | <u>Office</u>  | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u>  |              |                |               |
|  | <u>Performing</u>   | <u>or Funding</u>                               | <u>EAC</u>        | <u>EAC</u>     |                |                |                |                  |              |                |               |
|  | <u>Activity</u>   | <u>Vehicle</u>                                  |                   |                |                |                |                |                  |              |                |               |
|  | <u>Product Development Organizations</u>  |   |                   |                |                |                |                |                  |              |                |               |
|  | Rome Lab  | FFP/FCA   | Jun 95            | 250            |                |                |                | Continuing       |              | TBD            |               |
|  | Material Systems Group  | various   | various           | 1,400          |                |                |                | Continuing       |              | TBD            |               |
|  | Miscellaneous   | various   | various           | 85             |                |                |                | Continuing       |              | TBD            |               |
|  | DCAPES  | FFP/LHAF  | Jul 98            | 1,700          | 7,715          |                |                | Continuing       |              | TBD            |               |
|  | *In FY 00 DCAPES funding is transferred to PE 27438                             |   |                   |                |                |                |                |                  |              |                |               |
|  | <u>Support and Management Organizations</u>                                     |   |                   |                |                |                |                |                  |              |                |               |
|  | TEMS  |   |                   | 5,819          | 1,722          | 1,552          | 1,488          | Continuing       |              | TBD            |               |
|  | MITRE   |   |                   | 6,774          | 2,184          | 2,223          | 2,208          | Continuing       |              | TBD            |               |
|  | Miscellaneous   |   |                   | 15             | 614            | 42             | 47             | Continuing       |              | TBD            |               |
|  | <u>Test and Evaluation Organizations</u>  |   |                   |                |                |                |                |                  |              |                |               |

Project 674667

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Exhibit R-3 (PE 0303150F)

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                 | DATE                          | February 2000         |   | PROJECT               |                           |                      |
|--|---------------------------------|-------------------------------|-----------------------|---|-----------------------|---------------------------|----------------------|
| BUDGET ACTIVITY                                    |                                 | PE NUMBER AND TITLE           |                       | 0303150F WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM |                       |                           |                      |
| 07 - Operational System Development                |                                 |                               |                       |   |                       |                           |                      |
|  | <u>Subtotals</u>                | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u>                           | <u>Budget FY 2001</u> | <u>Budget to Complete</u> | <u>Total Program</u> |
|  | Subtotal Product Development    | 3,435                         | 7,715                 |   |                       | TBD                       | TBD                  |
|  | Subtotal Support and Management | 12,608                        | 4,520                 | 3,817   | 3,743                 | TBD                       | TBD                  |
|  | Subtotal Test and Evaluation    |                               |                       |   |                       |                           |                      |
|  | Total Project                   | 16,043                        | 12,235                | 3,817   | 3,743                 | TBD                       | TBD                  |

Project 674667

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Exhibit R-3 (PE 0303150F)

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Exhibit R-3 (PE 0303150F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                            |                                  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|----------------------------|----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |                            | PE NUMBER AND TITLE              |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |                            | 0303401F Communications Security |                  |                  |                  |                  |                  |                  |                  | 674861     |               |
|   | COST (\$ in Thousands)     | FY 1999 Actual                   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674861  | Cryptologic 2000           | 0                                | 0                | 4,857            | 4,700            | 5,511            | 5,507            | 4,017            | Continuing       | TBD        |               |
|   | Quantity of RDT&E Articles | 0                                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |

NOTE: FY99 through FY00 funds are in PE 33140F. Beginning in FY01, funding for this effort is located in this PE.

**(U) A. Mission Description**

The Cryptologic project consists of Air Force Electronic Key Management Systems (AFEKMS). AFEKMS, in concert with NSA's EKMS, provides a secure and flexible capability for the electronic generation, distribution, accounting, and management of key material, voice callwords, and communications security (COMSEC) publications for all AF weapon systems. AFEKMS replaces the existing physical distribution and management system providing COMSEC keying material for USAF Information Protection. Information Protection emphasizes access control, multi-level secure databases, trusted computing and information integrity. AFEKMS is a three tier system structure in a hierarchical arrangement. This tiered structure provides 'wholesale' to 'retail' to 'consumer' capability to distribute, manage and account for COMSEC keying material. Tier 1 installations comprise the 'wholesale' capability. Tier 2 installations comprise the distribution network and tier 3 comprises the 'retail locations' where keying material leaves the AFEKMS and enters the End Item COMSEC Equipment (EICE) - the consumer.

Acquisition includes Commercial Off The Shelf (COTS) computers and software, contractor developed application software, Government Furnished Equipment (GFE) and software such as the NSA's Local COMSEC Management Software (LCMS). Also, USAF developed application software (UAS) is necessary for unique systems such as the F-22 and unique key fill requirements of EICE for other airborne platforms.

Current technology feed into deployed Tier 2 installations: A contract study begins in Oct 99 under NSA supervision to determine the scope of re-hosting Tier 2 workstations from the current UNIX equipment to either Windows NT or SUN Solaris operating systems. This study is expected to take 15-24 months to complete. If successful re-hosting is feasible, it would reduce the hardware replacements costs to 20% of the original cost of the equipment. The Browser currently being developed will also be added to Tier 2 during tech refreshes and system upgrades.

Given the complexity of emerging communication technologies, the growing complexity of desired DOD/AF applications of these technologies, and more recently the experience and insight we have gained in the last few years in the Cryptologic 2020 application, we see the need for a solid continuous R&D line to work the constantly emerging challenges in developing, acquiring and fielding state-of-the-art Key Management Infrastructure software and COMSEC equipment.

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Exhibit R-2 (PE 0303401F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)           |   |               | DATE           | February 2000     |
|---|---|---------------|----------------|-------------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE   | PROJECT       |                |                   |
| <b>07 - Operational System Development</b>                    | <b>0303401F Communications Security</b>   | <b>674861</b> |                |                   |
| (U) <b><u>A. Mission Description Continued</u></b>            |   |               |                |                   |
| (U) <b><u>FY 1999 (\$ in Thousands)</u></b>                   |   |               |                |                   |
| (U) \$0   | Activity is Funded in PE 33140F (\$1.957)   |               |                |                   |
| (U) \$0   | Total   |               |                |                   |
| (U) <b><u>FY 2000 (\$ in Thousands)</u></b>                   |   |               |                |                   |
| (U) \$0   | Activity is Funded in PE 33140F (\$1.233)   |               |                |                   |
| (U) \$0   | Total   |               |                |                   |
| (U) <b><u>FY 2001 (\$ in Thousands)</u></b>                   |   |               |                |                   |
| (U) \$2,386   | Program Office Support - for continued work on the Key Management Infrastructure (KMI) for the Defense Information Infrastructure Common Operation Environment (DII-COE) the Browser-Based Development effort & AF Public Key Infrastructure implementation |               |                |                   |
| (U) \$485   | Tier 2 DII-COE Compliance   |               |                |                   |
| (U) \$1,986   | Local Management Device/Data Management Device (LMD/DMD) Browser Interface  |               |                |                   |
| (U) \$4,857   | Total   |               |                |                   |
| (U) <b><u>B. Budget Activity Justification</u></b>            |   |               |                |                   |
|   | This program is in budget activity 7, Operational System Development, because it addresses the development and transition of information security, protection and defensive capabilities and technologies.  |               |                |                   |
| (U) <b><u>C. Program Change Summary (\$ in Thousands)</u></b> |   |               |                |                   |
| (U) Previous President's Budget (FY 2000 PBR)                 |   |               | <u>FY 1999</u> | <u>FY 2000</u>    |
| (U) Appropriated Value  |   |               |                |                   |
| (U) Adjustments to Appropriated Value                         |   |               |                |                   |
| a. Congressional/General Reductions                           |   |               |                |                   |
| b. Small Business Innovative Research                         |   |               |                |                   |
| c. Omnibus or Other Above Threshold Reprogram                 |   |               |                |                   |
| d. Below Threshold Reprogram                                  |   |               |                |                   |
| e. Rescissions  |   |               |                |                   |
| f. Other  |   |               |                |                   |
| (U) Adjustments to Budget Years Since FY 2000 PBR             |   |               |                | 4,857             |
| Project 674861  |   |               |                |                   |
|   |   |               | <u>FY 2001</u> | <u>Total Cost</u> |
|   |   |               | 0              |                   |

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Exhibit R-2 (PE 0303401F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                   |                                  |          |          |          |          |          |            | DATE       | February 2000             |            |  |  |
|---|---|-------------------|----------------------------------|----------|----------|----------|----------|----------|------------|------------|---------------------------|------------|--|--|
| BUDGET ACTIVITY                                     |   |                   | PE NUMBER AND TITLE              |          |          |          |          | PROJECT  |            |            |                           |            |  |  |
| 07 - Operational System Development                 |   |                   | 0303401F Communications Security |          |          |          |          | 674861   |            |            |                           |            |  |  |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | Current Budget Submit/FY 2001 PBR   |                   |                                  |          |          |          |          |          |            |            | FY 2001                   | Total Cost |  |  |
| (U)   | Significant Program Changes:  |                   |                                  |          |          |          |          |          |            |            | 4,857                     | TBD        |  |  |
|   | N/A   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   |   | FY 1999           | FY 2000                          | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to    | Total Cost |                           |            |  |  |
|   |   | Actual            | Estimate                         | Estimate | Estimate | Estimate | Estimate | Estimate | Complete   |            |                           |            |  |  |
| (U)   | AF RDT&E  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | Other APPN  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | APPN 3600/PE 33140F/PE  | 1,957             | 1,233                            | 0        | 0        | 0        | 0        | 0        | Continuing | TBD        |                           |            |  |  |
|   | Title Information Systems   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | Security Program/BPAC   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | 674585/Title Cryptologic  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | 2020  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | APPN 3600/PE 64239F/PE  | 410               |                                  |          |          |          |          |          | Continuing | TBD        |                           |            |  |  |
|   | Title F-22/BPAC   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | 654069/BPAC Title Adv.  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | Tactical Fighter  |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | NOTE: FY99 through FY00 funds are in PE 33140F. Beginning in FY01, funding for this effort is located in this PE. |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | E. Acquisition Strategy   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   | All major contracts within this Program Element are awarded after full and open competition.                      |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
| (U)   | F. Schedule Profile   |                   |                                  |          |          |          |          |          |            |            |                           |            |  |  |
|   |   |                   |                                  | 1        | 2        | 3        | 4        | 1        | 2          | FY 2001    |                           |            |  |  |
|   |   |                   |                                  |          |          |          |          |          |            | 3          |                           |            |  |  |
|   |   |                   |                                  |          |          |          |          |          |            | 4          |                           |            |  |  |
| (U)   | Establish Tier 2 DII-COE Compliance   |                   |                                  |          |          |          |          |          | X          |            |                           |            |  |  |
| (U)   | Begin Development of LMD/DMD Browser Interface  |                   |                                  |          |          |          |          |          | X          |            |                           |            |  |  |
| (U)   | Start Continuous MITRE Support  |                   |                                  |          |          |          |          |          | X          |            |                           |            |  |  |
| Project 674861                                      |   | Page 3 of 5 Pages |                                  |          |          |          |          |          |            |            | Exhibit R-2 (PE 0303401F) |            |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |  |                                 |                                |                               |                               |                       |                           |                           |
|--|---|--|---------------------------------|--------------------------------|-------------------------------|-------------------------------|-----------------------|---------------------------|---------------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                            |                                 |                                |                               | DATE                          |                       | February 2000             |                           |
| 07 - Operational System Development                |   | 0303401F Communications Security               |                                 |                                |                               |                               |                       | PROJECT 674861            |                           |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |  |                                 |                                |                               |                               |                       |                           |                           |
| (U)  | Software Development  |  |                                 |                                |                               |                               |                       |                           |                           |
| (U)  | Total   |  |                                 |                                |                               |                               |                       |                           |                           |
|  |   |  |                                 |                                |                               |                               |                       |                           |                           |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |  |                                 |                                |                               |                               |                       |                           |                           |
| (U)  | <u>Performing Organizations:</u>  |  |                                 |                                |                               |                               |                       |                           |                           |
|  | <u>Contractor or Government Performing Activity</u>                             | <u>Contract Method/Type or Funding Vehicle</u> | <u>Award or Obligation Date</u> | <u>Performing Activity EAC</u> | <u>Project Office EAC</u>     | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u>     | <u>Budget to Complete</u> |
|  | <u>Product Development Organizations</u>  |  |                                 |                                |                               |                               |                       |                           |                           |
|  | SAIC (GS-35F-44616)   | BPA  | May 98                          | N/A                            | N/A                           | 0                             | 0                     | 0                         | TBD                       |
|  | L3  | TBD  | Dec 00                          | N/A                            | N/A                           | 0                             | 0                     | 0                         | TBD                       |
|  | ESC   | FFRDC  | Nov 00                          | N/A                            | N/A                           | 0                             | 0                     | 0                         | TBD                       |
|  | <u>Support and Management Organizations</u>                                     |  |                                 |                                |                               |                               |                       |                           |                           |
|  | N/A   |  |                                 |                                |                               |                               |                       |                           |                           |
|  | <u>Test and Evaluation Organizations</u>  |  |                                 |                                |                               |                               |                       |                           |                           |
|  | N/A   |  |                                 |                                |                               |                               |                       |                           |                           |
| (U)  | <u>Government Furnished Property:</u>   |  |                                 |                                |                               |                               |                       |                           |                           |
|  | <u>Contract</u>   | <u>Method/Type or Funding Vehicle</u>          | <u>Award or Obligation Date</u> | <u>Delivery Date</u>           | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u>         | <u>Budget FY 2000</u> | <u>Budget to Complete</u> | <u>Total Program</u>      |
|  | <u>Product Development Property</u>   |  |                                 |                                |                               |                               |                       |                           |                           |
|  | N/A   |  |                                 |                                |                               |                               |                       |                           |                           |
|  | <u>Support and Management Property</u>  |  |                                 |                                |                               |                               |                       |                           |                           |
|  | N/A   |  |                                 |                                |                               |                               |                       |                           |                           |
|  | <u>Test and Evaluation Property</u>   |  |                                 |                                |                               |                               |                       |                           |                           |
|  | N/A   |  |                                 |                                |                               |                               |                       |                           |                           |

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Exhibit R-3 (PE 0303401F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                                  |                | DATE           | February 2000      |               |
|--|--|----------------------------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE              |                | PROJECT        |                    |               |
| 07 - Operational System Development                |  | 0303401F Communications Security |                | 674861         |                    |               |
|  |  | Total Prior to FY 1999           | Budget FY 1999 | Budget FY 2000 | Budget to Complete | Total Program |
| <u>Subtotals</u>                                   |  |                                  |                |                |                    |               |
| Subtotal Product Development                       |  | 0                                | 0              | 0              | 4,857              | TBD           |
| Subtotal Support and Management                    |  |                                  |                |                |                    |               |
| Subtotal Test and Evaluation                       |  |                                  |                |                |                    |               |
| Total Project                                      |  | 0                                | 0              | 0              | 4,857              | TBD           |

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Exhibit R-3 (PE 0303401F)

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Exhibit R-3 (PE 0303401F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   |                              |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |  |             |   |             |  |             |       |
|--|---|------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|--|-------------|---|-------------|--|-------------|-------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE          |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |  |             |   |             |  |             |       |
| 07 - Operational System Development  |   | 0303601F MILSATCOM Terminals |                  |                  |                  |                  |                  |                  |                  | 672487     |               |  |             |   |             |  |             |       |
| COST (\$ in Thousands)   |   | FY 1999 Actual               | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |  |             |   |             |  |             |       |
| 672487   | MILSTAR (AF - Terminals)  | 6,018                        | 6,923            | 17,797           | 24,416           | 34,334           | 79,367           | 90,590           | 0                | 2,297,542  |               |  |             |   |             |  |             |       |
|  | Quantity of RDT&E Articles  | 0                            | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |  |             |   |             |  |             |       |
| <p>(U) <b>A. Mission Description</b></p> <p>Military Satellite Communications (MILSATCOM) provides world-wide communications to strategic and tactical warfighters. The MILSATCOM Terminals Program contains efforts to develop equipment for users to communicate over military satellites, including Milstar, Advanced Extremely High Frequency (AEHF), Ultra High Frequency (UHF) satellites, Defense Satellite Communication System (DSCS), and Wideband Gapfiller as well as commercial satellites. Global Broadcast Service (GBS) is a joint program to implement a world-wide, high-capacity satellite broadcast information system that will provide a continuous, high speed, one-way flow of high volume classified and unclassified data, imagery and other information to forces in garrison, deployed, or on the move. Milstar ground and airborne Command Post Terminal (CPT) enhancements are continuing in addition to system-level testing in support of Milstar IOC II. The MILSATCOM Terminals program began a gradual transition from a Milstar-centered program to a wider focus of multiband SATCOM supporting the tactical requirements for Air Expeditionary Forces while maintaining essential strategic connectivity for nuclear forces. Future concept development efforts and new terminals development became the key focus of the AF Terminals program in FY99 and FY00. In FY01, concept development work further increases emphasis on assessment of technological alternatives (commercial and military unique) and continues the AF Terminals roadmap development, culminating in new terminal products for assured high capacity connectivity for conventional and strategic air forces and ground command and control components. Airborne wideband terminal (AWT) risk reduction and ground multiband terminal (GMT) development begin in FY01. CPT replacement will begin in FY03. The Air Force's Milstar tactical terminals, the Single Channel Anti-Jam Manportable (SCAMP) and the Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) are funded by the Air Force and procured by the Army. Ground and airborne UHF terminal production continues. Efforts in the UHF SATCOM program are primarily focused on the ground and airborne Demand Assigned Multiple Access (DAMA) terminals design and implementation. DSCS terminal procurement efforts sustain and modernize the Ground Mobile Forces terminal and the Jam-Resistant Secure Communications (JRSC) subnet of DSCS.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u></p> <table> <tr> <td>(U) \$1,039</td> <td>Continued MILSATCOM terminals support activities</td> </tr> <tr> <td>(U) \$2,542</td> <td>Continued CPT upgrades/begin contractor test and operations support</td> </tr> <tr> <td>(U) \$2,437</td> <td>Concept/Prototype Demonstrations/MILSATCOM Terminals Roadmap</td> </tr> <tr> <td>(U) \$6,018</td> <td>Total</td> </tr> </table> |   |                              |                  |                  |                  |                  |                  |                  |                  |            | (U) \$1,039   | Continued MILSATCOM terminals support activities | (U) \$2,542 | Continued CPT upgrades/begin contractor test and operations support | (U) \$2,437 | Concept/Prototype Demonstrations/MILSATCOM Terminals Roadmap | (U) \$6,018 | Total |
| (U) \$1,039  | Continued MILSATCOM terminals support activities                    |                              |                  |                  |                  |                  |                  |                  |                  |            |               |  |             |   |             |  |             |       |
| (U) \$2,542  | Continued CPT upgrades/begin contractor test and operations support |                              |                  |                  |                  |                  |                  |                  |                  |            |               |  |             |   |             |  |             |       |
| (U) \$2,437  | Concept/Prototype Demonstrations/MILSATCOM Terminals Roadmap        |                              |                  |                  |                  |                  |                  |                  |                  |            |               |  |             |   |             |  |             |       |
| (U) \$6,018  | Total   |                              |                  |                  |                  |                  |                  |                  |                  |            |               |  |             |   |             |  |             |       |

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Exhibit R-2 (PE 0303601F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |  |                | DATE                      | February 2000  |
|---|--|----------------|---------------------------|----------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE  |                |                           | PROJECT        |
| <b>07 - Operational System Development</b>  | <b>0303601F MILSATCOM Terminals</b>  |                |                           | <b>672487</b>  |
| (U) <b><u>A. Mission Description Continued</u></b>  |  |                |                           |                |
| (U) <b><u>FY 2000 (\$ in Thousands)</u></b>   |  |                |                           |                |
| (U) \$1,260   | Continue MILSATCOM terminals support activities  |                |                           |                |
| (U) \$2,900   | Continue contractor test and operations support  |                |                           |                |
| (U) \$2,763   | Concept/Prototype Demo/MILSATCOM Terminals Roadmap/SATCOM testing  |                |                           |                |
| (U) \$6,923   | Total  |                |                           |                |
| (U) <b><u>FY 2001 (\$ in Thousands)</u></b>   |  |                |                           |                |
| (U) \$2,442   | Continue MILSATCOM terminals support activities  |                |                           |                |
| (U) \$1,563   | Continue contractor test and operations support  |                |                           |                |
| (U) \$5,192   | Concept/Prototype Demo/MILSATCOM Terminals Roadmap/SATCOM testing  |                |                           |                |
| (U) \$5,600   | Begin Ground Multiband development   |                |                           |                |
| (U) \$3,000   | Begin Airborne Wideband risk reduction   |                |                           |                |
| (U) \$17,797  | Total  |                |                           |                |
| (U) <b><u>B. Budget Activity Justification</u></b>  |  |                |                           |                |
|   | This effort is funded in Budget Activity 7, Operational System Development, because the program has completed a Milestone III review and is in production. |                |                           |                |
| (U) <b><u>C. Program Change Summary (\$ in Thousands)</u></b>   |  |                |                           |                |
| (U) Previous President's Budget (FY 2000 PBR)   |  | <b>FY 1999</b> | <b>FY 2000</b>            | <b>FY 2001</b> |
| (U) Appropriated Value  |  | 2,159          | 7,026                     | 14,955         |
| (U) Adjustments to Appropriated Value   |  | 2,352          | 7,026                     |                |
| a. Congressional/General Reductions   |  | -193           | -10                       |                |
| b. Small Business Innovative Research   |  | -62            |                           |                |
| c. Omnibus or Other Above Threshold Reprogram   |  |                | -38                       |                |
| d. Below Threshold Reprogram  |  | 3,955          |                           |                |
| e. Rescissions  |  | -34            | -55                       |                |
| f. Other  |  |                |                           |                |
| (U) Adjustments to Budget Years Since FY 2000 PBR   |  |                |                           | 2,842          |
| (U) Current Budget Submit/FY 2001 PBR   |  | 6,018          | 6,923                     | 17,797         |
| Note: \$3.955M FY99 Below Threshold Reprogramming (BTR) funded continuation of Air Force MILSATCOM Terminals roadmap and operational support that |  |                |                           |                |
| Project 672487  |  |                | Exhibit R-2 (PE 0303601F) |                |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                     | DATE                      | February 2000    |
|--|-------------------------------------|---------------------------|------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                 | PROJECT                   |                  |
| <b>07 - Operational System Development</b>   | <b>0303601F MILSATCOM Terminals</b> | <b>672487</b>             |                  |
| (U) <u>C. Program Change Summary (\$ in Thousands) Continued</u>   |                                     |                           |                  |
| started in FY98. This funding increased levels of on-going efforts such as: (1) AF terminal roadmap definition integrating SATCOM into the Global Grid, (2) Efforts to prototype multiband airborne SATCOM antennae, (3) Assessing commercial SATCOM capabilities, and (4) Supporting DOD MILSATCOM architecture definition. |                                     | FY 1999                   | FY 2000          |
|  |                                     | FY 2001                   | Total Cost       |
| (U) <u>Significant Program Changes:</u>  |                                     |                           |                  |
| This activity is a continuation of the FY98 effort. New starts include AWT risk reduction and GMT development to begin in FY01. FY01 adjustments add funding for Airborne Wideband terminal development.   |                                     |                           |                  |
| (U) <u>D. Other Program Funding Summary (\$ in Thousands)</u>  |                                     |                           |                  |
|  |                                     | FY 2000                   | FY 2001          |
|  |                                     | Estimate                  | Estimate         |
|  |                                     | FY 2001                   | FY 2002          |
|  |                                     | Estimate                  | Estimate         |
|  |                                     | FY 2002                   | FY 2003          |
|  |                                     | Estimate                  | Estimate         |
|  |                                     | FY 2003                   | FY 2004          |
|  |                                     | Estimate                  | Estimate         |
|  |                                     | FY 2004                   | FY 2005          |
|  |                                     | Estimate                  | Estimate         |
|  |                                     | FY 2005                   | Cost to Complete |
|  |                                     |                           | Total Cost       |
| (U) AF RDT&E   |                                     |                           |                  |
| (U) Other APPN   |                                     |                           |                  |
| (U) Appn 10, BPAC 119992, Aircraft Procurement   | 8,791                               | 19,135                    | 24,893           |
| (U) Appn 16, BPACs 836780, MILSATCOM Space and BPAC 822260, High Mobility Vehicle  | 25,673                              | 41,888                    | 48,175           |
| Related RDT&E: PE 64479F Milstar LDR/MDR Satellite Communications  |                                     |                           |                  |
| PE 33110F Defense Satellite Communications System (DSCS)   |                                     |                           |                  |
| PE 63854F Global Broadcast Service   |                                     |                           |                  |
| PE 63432F Polar EHF  |                                     |                           |                  |
| PE 63430F Advanced EHF   |                                     |                           |                  |
| (U) <u>E. Acquisition Strategy</u>   |                                     |                           |                  |
| All eighty-one Milstar Command Post terminals have been procured with investment funds. Software enhancements, testing, EDM repair, program, and technical support are continuing. These efforts will be modifications to existing contracts. Airborne Wideband will be a competitive acquisition.                           |                                     |                           |                  |
| (U) <u>F. Schedule Profile</u>   |                                     |                           |                  |
|  |                                     | FY 1999                   | FY 2000          |
|  |                                     | FY 2001                   | FY 2001          |
| Project 672487   | Page 3 of 6 Pages                   | Exhibit R-2 (PE 0303601F) |                  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                              |                    |   |   |                    |   | DATE | February 2000 | PROJECT |
|---|------------------------------|--------------------|---|---|--------------------|---|------|---------------|---------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE          |                    |   |   |                    |   |      |               |         |
| 07 - Operational System Development                 | 0303601F MILSATCOM Terminals |                    |   |   |                    |   |      |               | 672487  |
| (U) F. Schedule Profile Continued                   |                              |                    |   |   |                    |   |      |               |         |
| (U) CPT Upgrades Delivery and Production            | 1                            | FY 1999<br>2 * 3 * | 4 | 1 | FY 2000<br>2 X 3 X | 4 | 1    | X             | X       |
| (U) Milstar SYS IOC II                              | *                            |                    | * | * |                    |   |      |               | X       |
| (U) SCAMP Deliveries Begin                          |                              |                    | * | * |                    |   |      |               |         |
| (U) SMART-T LRIP Deliveries                         |                              |                    |   | * |                    |   |      |               |         |
| (U) SMART-T Production Deliveries                   |                              |                    |   |   |                    |   |      |               |         |
| (U) Airborne DAMA Terminal Upgrade                  |                              |                    |   |   |                    |   |      |               |         |
| (U) Contract Option                                 | *                            |                    |   |   |                    |   |      |               |         |
| (U) Deliveries                                      |                              |                    |   |   |                    |   |      |               |         |
| (U) Ground DAMA Terminal Deliveries                 |                              |                    |   | * |                    |   |      |               | X       |
| (U) Ground Multiband development                    | *                            | * *                | * | * |                    |   |      |               | X       |
| (U) Airborne Wideband Terminal Risk Reduct.         |                              |                    |   |   |                    |   |      |               | X       |
| * Completed event<br>X Planned event                |                              |                    |   |   |                    |   |      |               |         |

Project 672487
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Exhibit R-2 (PE 0303601F)

Project 672487

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Exhibit R-2 (PE 0303601F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |                    |                        |                |                |                | DATE                         | February 2000 |
|--|---|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|------------------------------|---------------|
| BUDGET ACTIVITY                                    |   |   |                          |                         |                    |                        |                |                |                | PROJECT                      | 672487        |
| 07 - Operational System Development                |   |   |                          |                         |                    |                        |                |                |                | PE NUMBER AND TITLE          |               |
|  |   |   |                          |                         |                    |                        |                |                |                | 0303601F MILSATCOM Terminals |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          |                         |                    |                        |                |                |                |                              |               |
|  |   |   |                          |                         |                    |                        |                |                |                | FY 1999                      | FY 2000       |
| (U)  | MILSATCOM terminals support activities  |   |                          |                         |                    |                        |                |                |                | 1,039                        | 1,260         |
| (U)  | CPT upgrades/contractor test and operations support                             |   |                          |                         |                    |                        |                |                |                | 2,542                        | 2,900         |
| (U)  | Concept/Prototype Demo/MILSATCOM Terminals Roadmap                              |   |                          |                         |                    |                        |                |                |                | 2,437                        | 2,763         |
| (U)  | Ground Multiband  |   |                          |                         |                    |                        |                |                |                | 0                            | 0             |
| (U)  | Airborne Wideband   |   |                          |                         |                    |                        |                |                |                | 0                            | 0             |
| (U)  | Total   |   |                          |                         |                    |                        |                |                |                | 6,018                        | 6,923         |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                         |                    |                        |                |                |                |                              |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |                    |                        |                |                |                |                              |               |
|  | Contract or Government Performing Activity                                      | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete           | Total Program |
| <b>Product Development Organizations</b>           |   |   |                          |                         |                    |                        |                |                |                |                              |               |
|  | Raytheon Corp   | FPIF/FFP                                | Jun 85                   | 889,337                 | 889,337            | 883,570                | 1,204          | 2,000          | 1,563          | 1,000                        | 889,337       |
|  | Rockwell  | CPIF                                    | Aug 93                   | 43,068                  | 43,068             | 43,068                 | 0              | 0              | 0              | 0                            | 43,068        |
|  | Miscellaneous   | Various                                 | Various                  | 3,076                   | 3,076              | 651,580                | 0              | 0              | 8,600          | 341,567                      | 1,001,747     |
|  | ViaSat  | C/FFP                                   | Oct 95                   | 3,076                   | 3,076              | 3,076                  | 0              | 0              | 0              | 0                            | 3,076         |
| <b>Support and Management Organizations</b>        |   |   |                          |                         |                    |                        |                |                |                |                              |               |
|  | MITRE   | CPAF                                    | Various                  | N/A                     | N/A                | 102,178                | 3,500          | 2,100          | 2,939          | 14,250                       | 124,967       |
|  | SPT Contractors   | Various                                 | Various                  | N/A                     | N/A                | 156,621                | 1,120          | 1,333          | 1,854          | 7,185                        | 168,113       |
|  | Tecolote  | Various                                 | Various                  | N/A                     | N/A                | 1,848                  | 150            | 310            | 705            | 0                            | 3,013         |
|  | Miscellaneous   | Various                                 | Various                  | N/A                     | N/A                | 19,715                 | 44             | 180            | 636            | 13,536                       | 34,111        |
| <b>Test and Evaluation Organizations</b>           |   |   |                          |                         |                    |                        |                |                |                |                              |               |
|  | Wright-Labs   | AF-616                                  | N/A                      | N/A                     | N/A                | 22,103                 | 0              | 1,000          | 1,500          | 0                            | 24,603        |
|  | Miscellaneous   | Various                                 | N/A                      | N/A                     | N/A                | 5,507                  | 0              | 0              | 0              | 0                            | 5,507         |
| Project 672487                                     |   |   |                          |                         |                    |                        |                |                |                | Exhibit R-3 (PE 0303601F)    |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                              |         | DATE    |         | February 2000 |           |
|--|--|------------------------------|---------|---------|---------|---------------|-----------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE          |         | PROJECT |         |               |           |
| 07 - Operational System Development                |  | 0303601F MILSATCOM Terminals |         | 672487  |         |               |           |
|  |  | Total Prior                  | Budget  | Budget  | Budget  | Budget to     | Total     |
|  |  | to FY 1999                   | FY 1999 | FY 2000 | FY 2001 | Complete      | Program   |
| Subtotals  |  |                              |         |         |         |               |           |
| Subtotal Product Development                       |  | 1,581,294                    | 1,204   | 2,000   | 10,163  | 342,567       | 1,937,228 |
| Subtotal Support and Management                    |  | 280,362                      | 4,814   | 3,923   | 6,134   | 34,971        | 330,204   |
| Subtotal Test and Evaluation                       |  | 27,610                       | 0       | 1,000   | 1,500   | 0             | 30,110    |
| Total Project                                      |  | 1,889,266                    | 6,018   | 6,923   | 17,797  | 377,538       | 2,297,542 |

Project 672487

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Exhibit R-3 (PE 0303601F)

Project 672487

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Exhibit R-3 (PE 0303601F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                |   |                  |                  |                  |                  |                  |                  |            | DATE | February 2000 |
|---|----------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY                                     |                | PE NUMBER AND TITLE                           |                  |                  |                  |                  |                  |                  |            |      |               |
| 07 - Operational System Development                 |                | 0305099F Global Air Traffic Management (GATM) |                  |                  |                  |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)                              | FY 1999 Actual | FY 2000 Estimate                              | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost                     | 24,882         | 6,402   | 8,508            | 9,496            | 7,567            | 7,720            | 7,872            | Continuing       | TBD        |      |               |
| 674689 Global Access Architecture                   | 22,780         | 6,402   | 8,508            | 9,496            | 7,567            | 7,720            | 7,872            | Continuing       | TBD        |      |               |
| 674690 GATM Integration                             | 2,102          | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 2,102      |      |               |
| Quantity of RDT&E Articles                          | 0              | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0          |      |               |

(U) **A. Mission Description**

4689: Global Air Traffic Management: GATM is the Air Force program designed to meet the evolving aviation requirements of the International Civil Aviation Organization (ICAO). GATM, Navigation and Safety, and Navigation Warfare (NAVWAR) are major components of the AF's Global Access, Navigation, and Safety (GANS) management effort. The Global Air Traffic Operations/Mobility Command and Control (GATO/MC2) System Program Office (SPO) supports GATM as the AF's central focal point for analyzing and evaluating operational requirements, developing aircraft system architectures, acquiring aviation equipment, and certifying weapon system implementation. The system architectures identify necessary equipment and aircraft capability shortfalls across the Air Force inventory, for mobility, information dominance, bombers, fighters, trainers, helicopters, and unmanned aerial vehicles. For those capabilities where no current solution exists, development activities are undertaken in conjunction with existing DoD communications, navigation, surveillance, and safety program offices. To facilitate development, integration, interoperability, and exploration of dual-use technologies, a reconfigurable cockpit and avionics test bed (RCAT) was developed. Dual-use capabilities of avionics to satisfy GATM and military requirements of the Air Force fleet will be explored. The SPO will continue projections of studies and prototype efforts necessary to ensure AF aviation weapon systems are postured to meet civil standards and future changes to the civil standards leading to free flight. This project supports the definition of requirements for ACAT III projects across multiple weapon systems. No existing program satisfies the requirements of the GATM initiatives.

4690: GATM Integration [for the C-130 platform]: Air Force Special Operations Command (AFSOC) funded a separate Multi-Mode Receiver (MMR) program to meet part of future GATM navigation requirements for AFSOC C-130s. GAO recommended the Air Force combine elements of AFSOC's Common Avionics Architecture for Penetration program with elements duplicated in the C-130 Avionics Modernization Program (AMP). GATM integration accurately reflects the application of AFSOC GATM funding from GATM integration to the overall C-130 AMP. Using GATM integration funds for the C-130 AMP eliminates the redundancy of two C-130 modernization efforts and minimizes down time. Realigning under the C-130 AMP provides MMR and Traffic Alert and Collision Avoidance System (TCAS) to comply with European and African airspace criteria. The MMR may incorporate a Microwave Landing System (MLS), Protected Instrument Landing System and Differential Global Positioning System. These modifications enable the MC-130H and other AFSOC aircraft to comply with changing ICAO airspace access criteria.

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  | DATE   |
|---|--|--|
| BUDGET ACTIVITY                                     |  | February 2000  |
| PE NUMBER AND TITLE                                 |  |  |
| <b>07 - Operational System Development</b>          |  | <b>0305099F Global Air Traffic Management (GATM)</b> |
| (U)   | <b>A. Mission Description Continued</b><br>Effort includes engineering design work, mod kit design, and kit proofing. The MC-130H and other Special Operations Forces (SOF) aircraft have highly unique and specialized software. Modification of the software involves changing the code, testing the changes, and updating software documentation and maintenance technical orders. FY99 includes initial funding to begin engineering design. In accordance with GAO recommendations, FY00 and FY01 GATM Integration funding was transferred to the C-130 AMP program for GATM initiatives. |  |
| (U)   | <b>B. Budget Activity Justification</b><br>Project 4689: This program upgrades avionics to add air traffic control capabilities to currently fielded weapon systems and is assigned Budget Activity 7, Operational Systems Development.<br>Project 4690: This program will develop mission essential capability for fielded weapon systems and is assigned Budget Activity 7, Operational Systems Development.   |  |
| (U)   | <b>C. Program Change Summary (\$ in Thousands)</b>   |  |
| (U)   | Previous President's Budget (FY 2000 PBR)  | FY 1999  |
| (U)   | Appropriated Value   | FY 2000  |
| (U)   | Adjustments to Appropriated Value  | FY 2001  |
|   | a. Congressional/General Reductions  | Total Cost   |
|   | b. Small Business Innovative Research  | 26,521   |
|   | c. Omnibus or Other Above Threshold Reprogram  | 6,517  |
|   | d. Below Threshold Reprogram   | 8,584  |
|   | e. Rescissions   | 27,056   |
|   | f. Other   | 6,517  |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  | -115   |
| (U)   | Current Budget Submit/FY 2001 PBR  | -76  |
|   |  | 6,402  |
|   |  | 8,508  |
|   |  | TBD  |
| (U)   | <b>Significant Program Changes:</b><br>AFSOC GATM Integration funding has been applied against the C-130 Avionics Modernization Program (AMP). FY99 funds will be used to begin design engineering for AFSOC aircraft. FY00 and FY01 funds were transferred to the C-130 AMP for GATM initiatives.   |  |

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

07 - Operational System Development

PROJECT

0305099F Global Air Traffic Management (GATM) 674689

| COST (\$ in Thousands)            | FY 1999<br>Actual | FY 2000<br>Estimate | FY 2001<br>Estimate | FY 2002<br>Estimate | FY 2003<br>Estimate | FY 2004<br>Estimate | FY 2005<br>Estimate | Cost to<br>Complete | Total Cost |
|-----------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|
|                                   |                   |                     |                     |                     |                     |                     |                     |                     |            |
| 674689 Global Access Architecture | 22,780            | 6,402               | 8,508               | 9,496               | 7,567               | 7,720               | 7,872               | Continuing          | TBD        |

## (U) A. Mission Description

4689: Global Air Traffic Management: GATM is the Air Force program designed to meet the evolving aviation requirements of the International Civil Aviation Organization (ICAO). GATM, Navigation and Safety, and Navigation Warfare (NAVWAR) are major components of the AF's Global Access, Navigation, and Safety (GANS) management effort. The Global Air Traffic Operations/Mobility Command and Control (GATO/MC2) System Program Office (SPO) supports GATM as the AF's central focal point for analyzing and evaluating operational requirements, developing aircraft system architectures, acquiring aviation equipment, and certifying weapon system implementation. The system architectures identify necessary equipment and aircraft capability shortfalls across the Air Force inventory, for mobility, information dominance, bombers, fighters, trainers, helicopters, and unmanned aerial vehicles. For those capabilities where no current solution exists, development activities are undertaken in conjunction with existing DoD communications, navigation, surveillance, and safety program offices. To facilitate development, integration, interoperability, and exploration of dual-use technologies, a reconfigurable cockpit and avionics test bed (RCAT) was developed. Dual-use capabilities of avionics to satisfy GATM and military requirements of the Air Force fleet will be explored. The SPO will continue projections of studies and prototype efforts necessary to ensure AF aviation weapon systems are postured to meet civil standards and future changes to the civil standards leading to free flight. This project supports the definition of requirements for ACAT III projects across multiple weapon systems. No existing program satisfies the requirements of the GATM initiatives.

## (U) FY 1999 (\$ in Thousands)

(U) \$2,161 System architecture definitions, development, and certification  
 (U) \$1,788 Operational requirements analysis, demonstration, and evaluation  
 (U) \$192 Acquisition of ID/IQ aviation equipment  
 (U) \$7,557 Prototype developments and the expansion of dual-use technologies  
 (U) \$9,270 Development of a GATM configurable cockpit and avionics test bed (RCAT)  
 (U) \$1,812 Nav/Safety and GPS/NAVWAR integration and interoperability evaluations  
 (U) \$22,780 Total

## (U) FY 2000 (\$ in Thousands)

(U) \$1,129 System architecture definitions, development, and certification  
 (U) \$975 Operational requirements analysis, demonstration, and evaluation  
 (U) \$2,554 Prototype developments and the expansion of dual-use technologies  
 (U) \$1,426 Development of a GATM configurable cockpit and avionics test bed (RCAT)

Project 674689

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Exhibit R-2A (PE 0305099F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |   |                | DATE            | February 2000     |
|--|--|---|----------------|-----------------|-------------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE   | PROJECT        |                 |                   |
| 07 - Operational System Development                  |  | 0305099F Global Air Traffic Management (GATM)                           | 674689         |                 |                   |
| (U)  | <u>A. Mission Description Continued</u>                      |   |                |                 |                   |
| (U)  | <u>FY 2000 (\$ in Thousands) Continued</u>                   |   |                |                 |                   |
| (U)  | \$203  | Acquisition of ID/IQ aviation equipment                                 |                |                 |                   |
| (U)  | \$115  | Nav/Safety and GPS/NAVWAR integration and interoperability evaluations  |                |                 |                   |
| (U)  | \$6,402  | Total   |                |                 |                   |
| (U)  | <u>FY 2001 (\$ in Thousands)</u>                             |   |                |                 |                   |
| (U)  | \$1,322  | System architecture definitions, development, and certification         |                |                 |                   |
| (U)  | \$1,358  | Operational requirements analysis, demonstration, and evaluation        |                |                 |                   |
| (U)  | \$2,786  | Prototype developments and the expansion of dual-use technologies       |                |                 |                   |
| (U)  | \$2,714  | Development of a GATM configurable cockpit and avionics test bed (RCAT) |                |                 |                   |
| (U)  | \$207  | Acquisition of ID/IQ aviation equipment                                 |                |                 |                   |
| (U)  | \$121  | Nav/Safety and GPS/NAVWAR integration and interoperability evaluations  |                |                 |                   |
| (U)  | \$8,508  | Total   |                |                 |                   |
| (U)  | <u>B. Project Change Summary</u>                             |   |                |                 |                   |
|  | None   |   |                |                 |                   |
| (U)  | <u>C. Other Program Funding Summary (\$ in Thousands)</u>    |   |                |                 |                   |
|  |  |   | <u>FY 1999</u> | <u>FY 2000</u>  | <u>Total Cost</u> |
|  |  |   | <u>Actual</u>  | <u>Estimate</u> | <u>Estimate</u>   |
| (U)  | AF RDT&E   |   |                |                 |                   |
| (U)  | Other APPN   |   |                |                 |                   |
| (U)  | Aircraft Procurement, AF, BA-5, C-5 Avionics                 | 9,700   | 22,600         | 129,937         | 740,347           |
|  | Modernization Program, PE 0401119F                           |   |                | 195,268         | 2,385             |
| (U)  | RDT&E, AF, BA-7, C-5 AMP, PE 0401119F, C-5 Airlift Squadrons | 33,594  | 44,172         | 217,337         | 163,120           |
| (U)  | Aircraft Procurement, AF, BA-5, C-5, 8.33 radio,             | 1,875   |                |                 | 118,685           |
|  |  |   |                |                 | 15,197            |

Project 674689

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Exhibit R-2A (PE 0305099F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)                          |  |   |                  |                  |                  |                  |                  |                            |            |
|---|--|---|------------------|------------------|------------------|------------------|------------------|----------------------------|------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                           |                  |                  |                  |                  |                  | DATE                       | PROJECT    |
| 07 - Operational System Development   |  | 0305099F Global Air Traffic Management (GATM) |                  |                  |                  |                  |                  | February 2000              | 674689     |
| (U) C. Other Program Funding Summary (\$ in Thousands)                        |  | FY 1999 Actual                                | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate           | Total Cost |
| PE0401119F  |  |   |                  |                  |                  |                  |                  |                            |            |
| (U) Aircraft Procurement, AF, BA-5, C-9 GATM, PE 0401314F                     |  |   |                  | 4,635            | 6,875            | 6,825            |                  |                            | 18,335     |
| (U) Aircraft Procurement, AF, BA-5, C-9 RVSM, PE 0401314F                     |  | 3,753   | 4,413            | 5,680            |                  |                  |                  |                            | 13,846     |
| (U) Aircraft Procurement, AF, BA-5, C-9 TAWS, PE 0401314F                     |  | 2,151   | 2,989            | 1,765            |                  |                  |                  |                            | 6,905      |
| (U) Aircraft Procurement, AF, BA-5, C-9 TCAS, PE 0401314F                     |  | 3,254   |                  |                  |                  |                  |                  |                            | 11,654     |
| (U) Aircraft Procurement, AF, BA-5, KC-10 8.33 radio, PE 0401219F             |  | 288   |                  |                  |                  |                  |                  |                            | 2,324      |
| (U) Aircraft Procurement, AF, BA-5, KC-10 GATM, PE 0401219F                   |  | 18,765  | 23,609           | 22,255           | 29,102           | 13,503           |                  |                            | 107,234    |
| (U) Aircraft Procurement, AF, BA-5, KC-10 ADS Broadcast Datalink, PE 0401219F |  |   |                  | 3,520            | 2,232            | 6,164            | 3,142            | 1,833                      | 16,891     |
| (U) Aircraft Procurement, AF, BA-5, KC-10 TCAS/TAWS, PE 0401219F              |  | 15,648  | 13,231           | 6,000            |                  |                  |                  |                            | 41,179     |
| (U) Aircraft Procurement, AF, BA-5, C-17 8.33 radio, PE 0401130F              |  |   |                  |                  |                  |                  |                  |                            | 25,345     |
| Project 674689  |  | Page 5 of 17 Pages                            |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305099F) |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)                                      |  |   |                  |                  |                  |                            |                  |                  |            |
|---|--|---|------------------|------------------|------------------|----------------------------|------------------|------------------|------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                           |                  | DATE             |                  | February 2000              |                  |                  |            |
| 07 - Operational System Development   |  | 0305099F Global Air Traffic Management (GATM) |                  |                  |                  | PROJECT                    |                  |                  |            |
|   |  |   |                  |                  |                  | 674689                     |                  |                  |            |
| (U) C. Other Program Funding Summary (\$ in Thousands)                                    |  |   |                  |                  |                  |                            |                  |                  |            |
|   |  | FY 1999 Actual                                | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate           | FY 2004 Estimate | FY 2005 Estimate | Total Cost |
| (U) Aircraft Procurement, AF, BA-5, C-17 HFDL, PE 0401130F                                |  |   |                  | 3,150            | 3,150            |                            |                  |                  | 6,300      |
| (U) Aircraft Procurement, AF, BA-5, C-17 GPS Integrity Monitoring Capability, PE 0401130F |  | 10,804  | 12,225           | 1,863            |                  |                            |                  |                  | 25,541     |
| (U) Aircraft Procurement, AF, BA-5, C-17 PLSR, PE 0401130F                                |  |   |                  |                  |                  |                            |                  |                  | 17,186     |
| (U) Aircraft Procurement, AF, BA-5, C-17 ADS Upgrade, PE 0401130F                         |  |   |                  |                  |                  |                            | 20,000           | 10,200           | 51,900     |
| (U) Aircraft Procurement, AF, BA-5, C-17 RNP-4, PE 0401130F                               |  |   |                  | 2,622            | 2,622            |                            |                  |                  | 5,244      |
| (U) Aircraft Procurement, AF, BA-5, C-17 TAWS, PE 0401130F                                |  |   |                  | 343              | 14,571           | 21,496                     | 7,094            |                  | 43,504     |
| (U) Aircraft Procurement, AF, BA-5, C-17 GATM PE 0401130F                                 |  |   | 25,600           | 38,400           | 12,800           |                            |                  |                  | 76,800     |
| (U) Aircraft Procurement, AF, BA-5, C-20 GATM, PE 0401314F                                |  |   |                  | 7,390            | 211              | 1,953                      |                  |                  | 9,554      |
| (U) Aircraft Procurement, AF, BA-5, C-20 TAWS, PE 0401314F                                |  | 229   | 3,119            | 4,800            | 6,000            |                            |                  |                  | 15,650     |
| Project 674689  |  |   |                  |                  |                  | Exhibit R-2A (PE 0305099F) |                  |                  |            |

## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |   |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|--|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE                           |                  |                  |                  |                  |                  |                  |                  | PROJECT                    |               |
| 07 - Operational System Development                  |   | 0305099F Global Air Traffic Management (GATM) |                  |                  |                  |                  |                  |                  |                  | 674689                     |               |
| C. Other Program Funding Summary (\$ in Thousands)   |   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-20 TCAS, PE 0401314F                        | FY 1999 Actual                                | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-20 TCAS, PE 0401314F                        | 2,720   |                  |                  |                  |                  |                  |                  |                  | 4,284                      |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-21 GATM/New Generation Cockpit, PE 0401314F | 57,450  | 8,627            | 6,717            | 9,470            | 2,964            | 1,645            | 1,645            |                  | 94,415                     |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-25 Windshear Warning, PE 0401314F           |   |                  |                  |                  |                  |                  |                  |                  | 7,805                      |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-25 GATM, PE 0401314F                        | 2,623   | 7,787            |                  | 648              | 911              |                  |                  |                  | 11,058                     |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-25 TAWS, PE 0401314F                        |   | 315              |                  |                  |                  |                  |                  |                  | 3,235                      |               |
| (U)  | Aircraft Procurement, AF, BA-5, C-32 GATM, PE 0401314F                        |   |                  | 6,572            | 2,296            | 7,546            |                  |                  |                  | 16,414                     |               |
| (U)  | Aircraft Procurement, AF, BA-5, T-43 TCAS, PE 0804742F                        |   |                  |                  |                  |                  | 1,743            | 6,500            |                  | 11,325                     |               |
| (U)  | Aircraft Procurement, AF, BA-5, T-43 FDR/CVR, PE 0804742F                     | 1,636   |                  |                  |                  |                  |                  |                  |                  | 7,711                      |               |
| (U)  | Aircraft Procurement, AF, BA-5, T-43 TAWS, PE 0804742F                        |   |                  | 3,072            | 3,459            |                  | 3,653            | 2,866            |                  | 13,050                     |               |
| Project 674689                                       |   |   |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305099F) |               |
|  |   | Page 7 of 17 Pages                            |                  |                  |                  |                  |                  |                  |                  |                            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)                                  |  |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                           |                  |                  |                  |                  |                  |                  |                  |            | PROJECT       |
| 07 - Operational System Development   |  | 0305099F Global Air Traffic Management (GATM) |                  |                  |                  |                  |                  |                  |                  |            | 674689        |
| (U) C. Other Program Funding Summary (\$ in Thousands)                                |  | FY 1999 Actual                                | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| (U) Aircraft Procurement, AF, BA-5, C-130 Flight Data Recorder, PE 0401115F           |  | 2,754   | 38,572           | 61,035           | 61,371           | 211,234          | 181,910          | 276,229          | 3,103,495        | 3,938,425  |               |
| (U) Aircraft Procurement, AF, BA-5, C-130 Avionics Modernization Program, PE 0401115F |  | 16,154  | 10,323           | 3,500            | 5,350            | 5,800            | 5,800            | 5,800            |                  | 70,103     |               |
| (U) Aircraft Procurement, AF, BA-5, C-130 ETCAS, PE 0401115F                          |  |   | 16,613           | 67,200           |                  |                  |                  |                  |                  | 83,813     |               |
| (U) Aircraft Procurement, AF, BA-5, C-135 8.33 radio, PE 0401218F                     |  | 24,103  | 15,224           | 1,050            |                  |                  |                  |                  |                  | 43,577     |               |
| (U) Aircraft Procurement, AF, BA-5, C-135 Interphone replacement, PE 0401218F         |  | 48,398  | 29,631           | 86,495           | 225,857          | 215,172          | 147,435          | 57,117           | 203,084          | 1,013,189  |               |
| (U) Aircraft Procurement, AF, BA-5, C-135 GATM, PE 0401218F                           |  | 27,687  | 47,392           | 40,034           | 16,371           |                  |                  |                  |                  | 141,484    |               |
| (U) Aircraft Procurement, AF, BA-5, C-135 RVSM, PE 0401218F                           |  | 8,932   | 19,383           | 9,439            | 8,788            |                  |                  |                  |                  | 92,708     |               |
| (U) Aircraft Procurement, AF, BA-5, C-135 TAWS, PE 0401218F                           |  | 9,852   | 13,808           | 33,308           | 20,691           | 11,853           |                  |                  |                  | 104,170    |               |
| (U) Aircraft Procurement, AF, BA-5, C-135 FDR/CVR, PE 0401218F                        |  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| Project 674689  |  | Exhibit R-2A (PE 0305099F)                    |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)              |  |   |                  |                    |                  |                            |                  |                  |            |
|---|--|---|------------------|--------------------|------------------|----------------------------|------------------|------------------|------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                           |                  | DATE               |                  | February 2000              |                  |                  |            |
| 07 - Operational System Development                               |  | 0305099F Global Air Traffic Management (GATM) |                  |                    |                  | PROJECT 674689             |                  |                  |            |
| (U) C. Other Program Funding Summary (\$ in Thousands)            |  | FY 1999 Actual                                | FY 2000 Estimate | FY 2001 Estimate   | FY 2002 Estimate | FY 2003 Estimate           | FY 2004 Estimate | FY 2005 Estimate | Total Cost |
| (U) Aircraft Procurement, AF, BA-5, C-135 Pacer CRAG, PE 0401218F |  | 129,515                                       | 170,657          | 71,550             |                  |                            |                  |                  | 659,861    |
| (U) Aircraft Procurement, AF, BA-5, C-137 TCAS, PE0401314         |  |   |                  |                    |                  |                            |                  |                  | 4,281      |
| (U) Aircraft Procurement, AF, BA-5, C-141 TCAS, PE 0401118F       |  | 23,656  | 9,357            |                    |                  |                            |                  |                  | 47,063     |
| (U) RDT&E, AF, BA-7, E-3 GATM, PE 0207417F                        |  |   |                  |                    |                  |                            | 24,000           | 72,000           | 96,000     |
| (U) Aircraft Procurement, AF, BA-5, E-3 GATM, PE 0207417F         |  |   |                  |                    |                  |                            | 789              | 2,300            | 3,089      |
| (U) Aircraft Procurement, AF, BA-5, E-4 8.33 radio, PE 0302015F   |  | 300   | 556              |                    |                  |                            |                  |                  | 1,232      |
| (U) Aircraft Procurement, AF, BA-5, E-4 TCAS, PE 0302015F         |  | 1,482   | 1,166            | 1,166              |                  |                            |                  |                  | 8,014      |
| (U) Aircraft Procurement, AF, BA-5, E-4 TAWS, PE 0302015F         |  | 1,300   | 1,300            | 2,500              |                  |                            |                  |                  | 8,622      |
| (U) Aircraft Procurement, AF, BA-5, E-4 GATM, PE 0302015F         |  |   |                  |                    |                  |                            | 6,731            | 20,500           | 27,231     |
| (U) Aircraft Procurement, AF, BA-5, E-4 FDR/CVR, PE 0302015F      |  | 359   | 364              | 364                |                  |                            |                  |                  | 1,087      |
| Project 674689  |  |   |                  | Page 9 of 17 Pages |                  | Exhibit R-2A (PE 0305099F) |                  |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   |                     |          |          |          |                            |          |          |          | DATE       | February 2000 |
|---|---|---------------------|----------|----------|----------|----------------------------|----------|----------|----------|------------|---------------|
| BUDGET ACTIVITY   |   | PE NUMBER AND TITLE |          |          |          | PROJECT                    |          |          |          | 674689     |               |
| 07 - Operational System Development   |   |                     |          |          |          |                            |          |          |          |            |               |
| C. Other Program Funding Summary (\$ in Thousands)  |   |                     |          |          |          |                            |          |          |          |            |               |
|   |   | FY 1999             | FY 2000  | FY 2001  | FY 2002  | FY 2003                    | FY 2004  | FY 2005  | Cost to  | Total Cost |               |
|   |   | Actual              | Estimate | Estimate | Estimate | Estimate                   | Estimate | Estimate | Complete |            |               |
| (U)   | 0302015F  |                     |          |          |          | 3,273                      | 27,352   | 52,728   |          | 83,353     |               |
| (U)   | Aircraft Procurement, AF, BA-5, E-8 GATM, PE 0207581F                         |                     |          |          |          |                            |          |          |          |            |               |
| (U)   | RDT&E, AF, BA-7, E-8 GATM, PE 0207581F  |                     |          |          |          |                            | 23,700   | 45,300   |          | 69,000     |               |
| (U)   | Aircraft Procurement, AF, BA-5, H-1 Integrated Data Acq Recorder, PE 0101235F | 965                 |          |          |          |                            |          |          |          | 9,596      |               |
| (U)   | Aircraft Procurement, AF, BA-5, H-1 TCAS, PE 0101235F                         |                     |          | 6,159    | 240      | 300                        | 540      |          |          | 7,239      |               |
| (U)   | Aircraft Procurement, AF, BA-5, GATM, PE 0305099F                             |                     |          |          |          |                            |          |          |          | 1,750      |               |
| (U)   | RDT&E, AF, BA07, B-52 GATM, PE 0101113F                                       |                     |          |          |          |                            | 10,000   | 25,000   | 40,000   | 75,000     |               |
| (U)   | Aircraft Procurement, AF, BA-5, C-12 FDR/CVR, PE 0401314F                     | 1,447               |          |          |          |                            |          |          |          | 9,047      |               |
| (U)   | Aircraft Procurement, AF, BA-5, C-12 TAWS, PE 0401314F                        | 950                 | 1,578    | 1,462    |          |                            |          |          |          | 3,990      |               |
| (U)   | D. Acquisition Strategy   |                     |          |          |          |                            |          |          |          |            |               |
| 4689: The GATM Global Access Architecture acquisition strategy enables the GATO/MC2 SPO to guide equipment acquisition supporting global air traffic operations. The SPO will ensure standardization and certification of USAF platforms/systems that operate in the national and global air traffic environments. The SPO will also provide technical expertise and interface with appropriate product/support centers, battle labs, and Department of Defense (DOD) research and development facilities in the execution of assigned tasks. Program Research and Development Agreements (PRDAs), Cooperative Research and Development Agreements (CRDAs), and |   |                     |          |          |          |                            |          |          |          |            |               |
| Project 674689  |   | Page 10 of 17 Pages |          |          |          | Exhibit R-2A (PE 0305099F) |          |          |          |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |   |  |  |  |  |  |  |  | DATE    | February 2000 |
|--|--|---|--|--|--|--|--|--|--|---------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE                           |  |  |  |  |  |  |  | PROJECT |               |
| 07 - Operational System Development                  |  | 0305099F Global Air Traffic Management (GATM) |  |  |  |  |  |  |  | 674689  |               |
| (U)  | <b>D. Acquisition Strategy Continued</b>   |   |  |  |  |  |  |  |  |         |               |
|  | Indefinite Delivery/Indefinite Quantity (ID/IQ) contracts will be competitively awarded. |   |  |  |  |  |  |  |  |         |               |
| (U)  | <b>E. Schedule Profile</b>   |   |  |  |  |  |  |  |  |         |               |
| (U)  | System Architecture Definitions  |   |  |  |  |  |  |  |  |         |               |
| (U)  | Operational Requirements Analysis  |   |  |  |  |  |  |  |  |         |               |
| (U)  | Prototype Development Contract Awards  |   |  |  |  |  |  |  |  |         |               |
| (U)  | Development of GATM Test Bed   |   |  |  |  |  |  |  |  |         |               |
| (U)  | Interoperability Test Bed Evaluations  |   |  |  |  |  |  |  |  |         |               |
| (U)  | GPS/NAVWAR Integration Activities  |   |  |  |  |  |  |  |  |         |               |
|  | * Denotes Completed Event  |   |  |  |  |  |  |  |  |         |               |
|  | X Denotes Scheduled Event  |   |  |  |  |  |  |  |  |         |               |

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Exhibit R-2A (PE 0305099F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                    |                        |                |                |                | DATE  | February 2000 | PROJECT |                           |
|--|--|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|---|---------------|---------|---------------------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         |                    |                        |                |                |                | PE NUMBER AND TITLE                           |               |         |                           |
| 07 - Operational System Development                |  |   |                          |                         |                    |                        |                |                |                | 0305099F Global Air Traffic Management (GATM) |               |         | 674689                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                    |                        |                |                |                |   |               |         |                           |
| (U)  | System architecture definitions, development, and certification          |   |                          |                         |                    |                        |                |                |                |   | FY 1999       | FY 2000 | FY 2001                   |
| (U)  | Operational requirements analysis, demonstration, and evaluation         |   |                          |                         |                    |                        |                |                |                |   | 2,161         | 1,129   | 1,322                     |
| (U)  | Acquisition of ID/IQ aviation equipment                                  |   |                          |                         |                    |                        |                |                |                |   | 1,788         | 975     | 1,358                     |
| (U)  | Prototype developments and the expansion of dual-use technologies        |   |                          |                         |                    |                        |                |                |                |   | 192           | 203     | 207                       |
| (U)  | Development of a GATM configurable cockpit and avionics test bed (RCAT)  |   |                          |                         |                    |                        |                |                |                |   | 7,557         | 2,554   | 2,786                     |
| (U)  | Nav/Safety and GPS/NAVWAR integration and interoperability evaluations   |   |                          |                         |                    |                        |                |                |                |   | 9,270         | 1,426   | 2,714                     |
| (U)  | Total  |   |                          |                         |                    |                        |                |                |                |   | 1,812         | 115     | 121                       |
|  |  |   |                          |                         |                    |                        |                |                |                |   | 22,780        | 6,402   | 8,508                     |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                    |                        |                |                |                |   |               |         |                           |
| (U)  | Performing Organizations:  |   |                          |                         |                    |                        |                |                |                |   |               |         |                           |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete                            | Total Program |         |                           |
|  | Product Development Organizations  |   |                          |                         |                    |                        |                |                |                |   |               |         |                           |
|  | MIT  | FFP                                     | Nov 98                   | TBD                     | TBD                | 0                      | 1,900          | 350            | 421            | Continuing                                    | TBD           |         |                           |
|  | Honeywell  | IDIQ                                    | Nov 98                   | TBD                     | TBD                | 0                      | 2,642          | 1,719          | 2,095          | Continuing                                    | TBD           |         |                           |
|  | Allied Signal  | IDIQ                                    | Nov 98                   | TBD                     | TBD                | 0                      | 1,975          | 1,654          | 1,973          | Continuing                                    | TBD           |         |                           |
|  | Northrop Grumman   | CPAF                                    | Feb 99                   | TBD                     | TBD                | 0                      | 2,499          | 0              | 0              | 0   | 2,499         |         |                           |
|  | Rockwell Collins   | IDIQ                                    | Nov 98                   | TBD                     | TBD                | 0                      | 978            | 512            | 582            | Continuing                                    | TBD           |         |                           |
|  | MITRE Corporation  | CPAF                                    | Oct 98                   | TBD                     | TBD                | 0                      | 4,163          | 678            | 934            | Continuing                                    | TBD           |         |                           |
|  | Horizons Technology Inc  | IDIQ                                    | Feb 99                   | TBD                     | TBD                | 0                      | 2,429          | 812            | 975            | Continuing                                    | TBD           |         |                           |
|  | TASC   | CPFF                                    | Jan 99                   | 728                     | 728                | 0                      | 728            | 0              | 0              | 0   | 728           |         |                           |
|  | ARINC Inc  | FFP                                     | July 99                  | 840                     | 840                | 0                      | 840            | 0              | 0              | 0   | 840           |         |                           |
|  | UNK  | FFP                                     | Sep 99                   | 750                     | 750                | 0                      | 750            | 0              | 0              | 0   | 750           |         |                           |
|  | Bremmer Associates   | FFP                                     | Feb 99                   | 729                     | 729                | 0                      | 729            | 0              | 0              | 0   | 729           |         |                           |
|  | UNK  | UNK                                     | Sep 99                   | 500                     | 500                | 0                      | 500            | 0              | 0              | 0   | 500           |         |                           |
|  | MCR  | IDIQ                                    | Feb                      | TBD                     | TBD                | 0                      | 350            | 135            | 203            | Continuing                                    | TBD           |         |                           |
|  | Federal Tech Services  | FFP                                     | Aug 99                   | 300                     | 300                | 0                      | 300            | 0              | 0              | 0   | 300           |         |                           |
| Project 674689                                     |  |   |                          |                         |                    |                        |                |                |                | Page 12 of 17 Pages                           |               |         | Exhibit R-3 (PE 0305099F) |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |         |                     |     | DATE   | February 2000  | PROJECT        |                |                    |               |
|--|---------|---------------------|-----|--|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |         | PE NUMBER AND TITLE |     | 0305099F Global Air Traffic Management (GATM) 674689 |                |                |                |                    |               |
| 07 - Operational System Development                |         |                     |     |  |                |                |                |                    |               |
| (U) Performing Organizations Continued:            |         |                     |     |  |                |                |                |                    |               |
| Product Development Organizations                  |         |                     |     |  |                |                |                |                    |               |
| Various  | various | TBD                 | TBD | 0  | 896            | 191            | 903            | Continuing         | TBD           |
| Support and Management Organizations               |         |                     |     |  |                |                |                |                    |               |
| MITRE Corporation                                  | CPAF    | TBD                 | TBD | 0  | 477            | 215            | 218            | Continuing         | TBD           |
| Various  | Various | TBD                 | TBD | 864  | 624            | 136            | 204            | Continuing         | TBD           |
| Test and Evaluation Organizations                  |         |                     |     |  |                |                |                |                    |               |
| Subtotals  |         |                     |     |  |                |                |                |                    |               |
| Subtotal Product Development                       |         |                     |     |  |                |                |                |                    |               |
| Subtotal Support and Management                    |         |                     |     |  |                |                |                |                    |               |
| Subtotal Test and Evaluation                       |         |                     |     |  |                |                |                |                    |               |
| Total Project                                      |         |                     |     |  |                |                |                |                    |               |
|  |         |                     |     | Total Prior to FY 1999                               | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  |         |                     |     | 0  | 21,679         | 6,051          | 8,086          | TBD                | TBD           |
|  |         |                     |     | 864  | 1,101          | 351            | 422            | TBD                | TBD           |
|  |         |                     |     | 864  | 22,780         | 6,402          | 8,508          | TBD                | TBD           |

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Exhibit R-3 (PE 0305099F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                           |   |                  |                  |                  |                  |                  |                  |            |
|--|---------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY  |                           | PE NUMBER AND TITLE                           |                  |                  |                  |                  |                  | DATE             | PROJECT    |
| 07 - Operational System Development  |                           | 0305099F Global Air Traffic Management (GATM) |                  |                  |                  |                  |                  | February 2000    | 674690     |
|  | COST (\$ in Thousands)    | FY 1999 Actual                                | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Total Cost |
| 674690   | GATM Integration          | 2,102   | 0                | 0                | 0                | 0                | 0                | 0                | 2,102      |
| <p>(U) <b>A. Mission Description</b></p> <p>4690: GATM Integration [for the C-130 platform]: Air Force Special Operations Command (AFSOC) funded a separate Multi-Mode Receiver (MMR) program to meet part of future GATM navigation requirements for AFSOC C-130s. GAO recommended the Air Force combine elements of AFSOC's Common Avionics Architecture for Penetration program with elements duplicated in the C-130 Avionics Modernization Program (AMP). GATM integration accurately reflects the application of AFSOC GATM funding from GATM integration to the overall C-130 AMP. Using GATM integration funds for the C-130 AMP eliminates the redundancy of two C-130 modernization efforts and minimizes down time. Realigning under the C-130 AMP provides MMR and Traffic Alert and Collision Avoidance System (TCAS) to comply with European and African airspace criteria. The MMR may incorporate a Microwave Landing System (MLS), Protected Instrument Landing System and Differential Global Positioning System. These modifications enable the MC-130H and other AFSOC aircraft to comply with changing ICAO airspace access criteria. Effort includes engineering design work, mod kit design, and kit proofing. The MC-130H and other Special Operations Forces (SOF) aircraft have highly unique and specialized software. Modification of the software involves changing the code, testing the changes, and updating software documentation and maintenance technical orders. FY99 includes initial funding to begin engineering design. In accordance with GAO recommendations, FY00 and FY01 GATM Integration funding was transferred to the C-130 AMP program for GATM initiatives.</p> |                           |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | FY 1999 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$1,064                   |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$745                     |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$293                     |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$2,102                   |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | FY 2000 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$0                       |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$0                       |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | FY 2001 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$0                       |   |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$0                       |   |                  |                  |                  |                  |                  |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                     |  |  |  |  |  |  |  | DATE  | February 2000 | PROJECT |        |
|--|--|---------------------|--|--|--|--|--|--|--|---|---------------|---------|--------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE |  |  |  |  |  |  |  | 0305099F Global Air Traffic Management (GATM) |               |         | 674690 |
| 07 - Operational System Development                  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
| (U)  | <u>B. Project Change Summary</u>   |                     |  |  |  |  |  |  |  |   |               |         |        |
|  | AFSOC GATM Integration funding has been applied against the C-130 Avionics Modernization Program (AMP). FY99 funds will be used to begin design engineering for AFSOC aircraft. FY00 and FY01 funds were transferred to the C-130 AMP. |                     |  |  |  |  |  |  |  |   |               |         |        |
| (U)  | <u>C. Other Program Funding Summary (\$ in Thousands)</u>  |                     |  |  |  |  |  |  |  |   |               |         |        |
|  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
|  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
|  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
|  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
|  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
|  |  |                     |  |  |  |  |  |  |  |   |               |         |        |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         | DATE               | February 2000      |
|--|--|---|--------------------------|-------------------------|--------------------|--------------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                           |                          |                         | PROJECT            |                    |
| 07 - Operational System Development                |  | 0305099F Global Air Traffic Management (GATM) |                          |                         | 674690             |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                    |                    |
| (U)  | Software engineering   |   |                          |                         | FY 1999            | FY 2000            |
| (U)  | System engineering   |   |                          |                         | 745                |                    |
| (U)  | Management and Support   |   |                          |                         | 1,064              |                    |
| (U)  | Total  |   |                          |                         | 293                |                    |
| (U)  |  |   |                          |                         | 2,102              |                    |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                    |                    |
| (U)  | Performing Organizations:  |   |                          |                         |                    |                    |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle       | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Program      |
|  | Product Development Organizations  |   |                          |                         |                    |                    |
|  | TBD  | TBD   | Dec 98                   |                         | 1,747              | 0                  |
|  | Support and Management Organizations                                     |   |                          |                         |                    |                    |
|  | WR-ALC/LU  | TBD   |                          |                         | 0                  | 188                |
|  | ASC/LU   | TBD   |                          |                         | 0                  | 100                |
|  | Test and Evaluation Organizations  |   |                          |                         |                    |                    |
| (U)  | Government Furnished Property:   |   |                          |                         |                    |                    |
|  | Contract Method/Type or Funding Vehicle                                  | Award or Obligation Date                      | Delivery Date            | Total Prior to FY 1999  | Budget FY 1999     | Budget FY 2000     |
|  | Item Description   |   |                          |                         |                    |                    |
|  | Product Development Property   |   |                          |                         |                    |                    |
|  | TBD  |   |                          |                         |                    |                    |
|  | Support and Management Property  |   |                          |                         |                    |                    |
|  | TBD  |   |                          |                         |                    |                    |
|  | Test and Evaluation Property   |   |                          |                         |                    |                    |
|  |  |   |                          |                         | Budget FY 2001     | Budget to Complete |
|  |  |   |                          |                         |                    | Total Program      |
|  |  |   |                          |                         | 0                  | 188                |
|  |  |   |                          |                         | 0                  | 100                |
|  |  |   |                          |                         | 0                  | 1,814              |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                   |                   |                   |                       |                  |       |  |
|--|--|---|-------------------|-------------------|-------------------|-----------------------|------------------|-------|--|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                           |                   | DATE              |                   | PROJECT               |                  |       |  |
| 07 - Operational System Development                |  | 0305099F Global Air Traffic Management (GATM) |                   | February 2000     |                   | 674690                |                  |       |  |
|  |  | Total Prior<br>to FY 1999                     | Budget<br>FY 1999 | Budget<br>FY 2000 | Budget<br>FY 2001 | Budget to<br>Complete | Total<br>Program |       |  |
| Subtotals  |  |   |                   |                   |                   |                       |                  |       |  |
| Subtotal Source for SBIR                           |  | 0   | 1,814             |                   |                   | 0                     |                  | 1,814 |  |
| Subtotal Product Development                       |  | 0   | 288               |                   |                   | 0                     |                  | 288   |  |
| Subtotal Support and Management                    |  |   |                   |                   |                   |                       |                  |       |  |
| Subtotal Test and Evaluation                       |  |   |                   |                   |                   |                       |                  |       |  |
| Total Project                                      |  | 0   | 2,102             |                   |                   | 0                     |                  | 2,102 |  |

Project 674690

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Exhibit R-3 (PE 0305099F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                            |                                    |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|----------------------------|------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |                            | PE NUMBER AND TITLE                |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |                            | 0305110F Satellite Control Network |                  |                  |                  |                  |                  |                  |                  | 673276     |               |
| COST (\$ in Thousands)                              |                            | FY 1999 Actual                     | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 673276  | Satellite Control Network  | 45,343                             | 60,977           | 56,643           | 97,504           | 41,450           | 32,640           | 33,657           | Continuing       | TBD        |               |
|   | Quantity of RDT&E Articles | 0                                  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |

(U) **A. Mission Description**  
 The Air Force Satellite Control Network (AFSCN) mission is to fly operational USAF and other DoD satellites. The AFSCN also provides launch and early orbit tracking operations in support of all major US launches. Air Force Space Command (AFSPC) performs operations and maintenance and Air Force Materiel Command (AFMC) performs modernization and sustainment of the system to meet requirements validated by a HQ USAF approved Operational Requirements Document (ORD). This program element contains funds for the development and acquisition of this integrated national satellite telemetry, tracking, commanding, and data relay capability to meet the requirements of the growing inventory of operational and developmental DoD, National, Civil, and Allied satellite systems. Improvement and Modernization efforts in command & control, communications, and range elements of the AFSCN will ensure DoD space systems are operationally ready to support the CINCs' warfighting requirements.

The AFSCN is a global infrastructure of control centers, remote tracking stations (RTSs), and communications links that provide the highly reliable command and control, communications, and range systems required to support the nation's surveillance, navigation, communications, and weather satellite operations. The AFSCN is the DoD common user network that provides satellite state-of-health, tracking, telemetry, and commanding (TT&C) for the following operational satellite systems: Defense Meteorological Satellite Program (DMSP), Global Positioning System (GPS), Defense Satellite Communications System (DSCS), Defense Support Program (DSP), Fleet Satellite (FLEETSAT), Military Strategic and Tactical Relay Satellite (MILSTAR), the Navy's Ultra High Frequency Follow-On (UHF F/O), Skynet, NATO III/IV, and classified programs.

AFSCN Improvement and Modernization (I&M): AFSCN I&M is an ongoing program of replacements and upgrades which will replace non-standard, unsupportable equipment with more reliable, maintainable and standardized hardware and software. This new equipment will enable AFSPC satellite operations to be performed with fewer, less skilled personnel and will significantly reduce hardware/software maintenance costs. The principal efforts within this program are: Network Operations Upgrades, Communications Upgrades, and Range Upgrades.

NETWORK OPERATIONS UPGRADES: The current manpower intensive scheduling system to deconflict and allocate network TT&C assets to support operational space vehicles was replaced with Electronic Schedule Dissemination (ESD), a Year 2000-compliant system which performs network resource scheduling. The Orbit Analysis Subsystem (OAS) is a Year 2000-compliant replacement of the collision avoidance functions currently residing at Onizuka AS. The OAS will be installed at

Project 673276

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Exhibit R-2 (PE 0305110F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |   | DATE                    |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
|---|---|-------------------------|-------------------------------|--|-------------|---|--------------|---|--------------|---|--------------|-------|-------------------------------|--|-------------|--|--------------|---|--------------|---|-------------|--|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE   | PROJECT                 |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| 07 - Operational System Development   | 0305110F Satellite Control Network  | February 2000<br>673276 |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| <p>(U) <b>A. Mission Description Continued</b><br/>           Schriever AFB CO. Both the ESD and OAS offer the potential for reducing satellite control O&amp;M costs through enhanced commonality and standardization, simplified operations, and automation. Commercial off-the-shelf (COTS) hardware and software will be procured for the upgrades. The software portions will be modified to meet AFSPC's operational requirements.</p> <p>COMMUNICATIONS UPGRADES: This effort will transition the current, costly point-to-point AFSCN communications network to a communications grid system that integrates government and commercial networks as technology becomes available. Several standardization efforts are being implemented to improve and modernize the communications and ground segment elements of the AFSCN, including: Archival recording systems to replace obsolete, manpower-intensive analog equipment with automated, standardized digital COTS systems; Wide Area Network Interface Units (WANIU) which standardize hardware and reduce O&amp;M costs for performing multiplexing functions in the AFSCN, as well as provide an Asynchronous Transfer Mode (ATM) interface; and Operational Switch Replacement (OSR) to provide increased capacity, reliability, data quality, and user access.</p> <p>RANGE UPGRADES: This effort will upgrade the current Automated Remote Tracking Station (ARTS) and other Range assets. Several integrated projects will standardize the remote tracking stations, upgrade and/or replace outdated equipment in order to reduce failures, correct operational deficiencies, and reduce operating and sustainment costs.</p> <table> <tr> <td>(U) FY 1999 (\$ in Thousands)</td> <td></td> </tr> <tr> <td>(U) \$2,000</td> <td>Network Operations Upgrades: completed development of ESD/Automated Scheduling Tool for Range Operations (ASTRO) and the OAS.</td> </tr> <tr> <td>(U) \$30,692</td> <td>Communications Upgrades: continued developing Archival Recorder System; continued developing Operational Switch Replacement; supported WANIU installation at RTSs and Operational Control Nodes (OCNs).</td> </tr> <tr> <td>(U) \$12,651</td> <td>Network Integration and Systems Engineering: continued system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and Remote Tracking Stations (RTSs).</td> </tr> <tr> <td>(U) \$45,343</td> <td>Total</td> </tr> <tr> <td>(U) FY 2000 (\$ in Thousands)</td> <td></td> </tr> <tr> <td>(U) \$5,164</td> <td>Network Operations Upgrades: begin OAS follow-on development to continue to upgrade the radio frequency interference (RFI) capabilities.</td> </tr> <tr> <td>(U) \$31,228</td> <td>Communications Upgrades: continue OSR development; complete WANIU and archival recorders.</td> </tr> <tr> <td>(U) \$15,478</td> <td>Range Upgrades: begin Control and Status (C&amp;S) Processor Upgrade development to continue the ARTS modernization effort; as a continuation of the modernization effort to standardize hardware and software, begin Standards Protocol requirements definition effort to address impact on AFSCN architecture of emerging space communications protocols being examined by DOD, NASA, and the International Standards Organization.</td> </tr> <tr> <td>(U) \$9,107</td> <td>Network Integration and Systems Engineering: continue system engineering and integration of hardware/software to meet evolving satellite</td> </tr> </table> |   |                         | (U) FY 1999 (\$ in Thousands) |  | (U) \$2,000 | Network Operations Upgrades: completed development of ESD/Automated Scheduling Tool for Range Operations (ASTRO) and the OAS. | (U) \$30,692 | Communications Upgrades: continued developing Archival Recorder System; continued developing Operational Switch Replacement; supported WANIU installation at RTSs and Operational Control Nodes (OCNs). | (U) \$12,651 | Network Integration and Systems Engineering: continued system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and Remote Tracking Stations (RTSs). | (U) \$45,343 | Total | (U) FY 2000 (\$ in Thousands) |  | (U) \$5,164 | Network Operations Upgrades: begin OAS follow-on development to continue to upgrade the radio frequency interference (RFI) capabilities. | (U) \$31,228 | Communications Upgrades: continue OSR development; complete WANIU and archival recorders. | (U) \$15,478 | Range Upgrades: begin Control and Status (C&S) Processor Upgrade development to continue the ARTS modernization effort; as a continuation of the modernization effort to standardize hardware and software, begin Standards Protocol requirements definition effort to address impact on AFSCN architecture of emerging space communications protocols being examined by DOD, NASA, and the International Standards Organization. | (U) \$9,107 | Network Integration and Systems Engineering: continue system engineering and integration of hardware/software to meet evolving satellite |
| (U) FY 1999 (\$ in Thousands)   |   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$2,000   | Network Operations Upgrades: completed development of ESD/Automated Scheduling Tool for Range Operations (ASTRO) and the OAS.   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$30,692  | Communications Upgrades: continued developing Archival Recorder System; continued developing Operational Switch Replacement; supported WANIU installation at RTSs and Operational Control Nodes (OCNs).   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$12,651  | Network Integration and Systems Engineering: continued system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and Remote Tracking Stations (RTSs).   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$45,343  | Total   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) FY 2000 (\$ in Thousands)   |   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$5,164   | Network Operations Upgrades: begin OAS follow-on development to continue to upgrade the radio frequency interference (RFI) capabilities.  |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$31,228  | Communications Upgrades: continue OSR development; complete WANIU and archival recorders.   |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$15,478  | Range Upgrades: begin Control and Status (C&S) Processor Upgrade development to continue the ARTS modernization effort; as a continuation of the modernization effort to standardize hardware and software, begin Standards Protocol requirements definition effort to address impact on AFSCN architecture of emerging space communications protocols being examined by DOD, NASA, and the International Standards Organization. |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |
| (U) \$9,107   | Network Integration and Systems Engineering: continue system engineering and integration of hardware/software to meet evolving satellite  |                         |                               |  |             |   |              |   |              |   |              |       |                               |  |             |  |              |   |              |   |             |  |

| Project 673276 | Page 2 of 7 Pages | Exhibit R-2 (PE 0305110F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |   |               | DATE                      | February 2000  |
|---|---|---------------|---------------------------|----------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                       | PROJECT       |                           |                |
| <b>07 - Operational System Development</b>  | <b>0305110F Satellite Control Network</b> | <b>673276</b> |                           |                |
| (U) <b>A. Mission Description Continued</b>   |   |               |                           |                |
| (U) <b>FY 2000 (\$ in Thousands) Continued</b>  |   |               |                           |                |
| (U) program requirements at OCNs and RTSs.  |   |               |                           |                |
| (U) Total   |   |               |                           |                |
| (U) <b>FY 2001 (\$ in Thousands)</b>  |   |               |                           |                |
| (U) Network Operations Upgrades: complete development of OAS follow-on capability.  |   |               |                           |                |
| (U) Communications Upgrades: complete OSR development; begin Defense Information System Network (DISN)-ATM connectivity development to continue communications upgrade efforts and to enable external users to connect to the AFSCN through DISN.                 |   |               |                           |                |
| (U) Range Upgrades: continue Standards Protocol development; continue C&S Processor Upgrade development; begin effort to upgrade the Automated Remote Tracking Stations (ARTS) Space/Ground interface upgrade as a continuation of the ARTS modernization effort. |   |               |                           |                |
| (U) Network Integration and Systems Engineering: continue system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and RTSs.   |   |               |                           |                |
| (U) Total   |   |               |                           |                |
| (U) <b>B. Budget Activity Justification</b>   |   |               |                           |                |
| This effort is in Budget Activity 7, Operational System Development, because it supports a fielded system.  |   |               |                           |                |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b>  |   |               |                           |                |
| (U) Previous President's Budget (FY 2000 PBR)   |   |               | <b>FY 1999</b>            | <b>FY 2000</b> |
| (U) Appropriated Value  |   |               | 55,812                    | 61,918         |
| (U) Adjustments to Appropriated Value   |   |               | 56,622                    | 61,918         |
| a. Congressional/General Reductions   |   |               | -810                      | -123           |
| b. Small Business Innovative Research   |   |               | -1,885                    | -335           |
| c. Omnibus or Other Above Threshold Reprogram   |   |               | -8,330                    |                |
| d. Below Threshold Reprogram  |   |               | -254                      | -483           |
| e. Rescissions  |   |               |                           |                |
| f. Other  |   |               |                           |                |
| (U) Adjustments to Budget Years Since FY 2000 PBR   |   |               | 45,343                    | 60,977         |
| (U) Current Budget Submit/FY 2001 PBR   |   |               |                           |                |
|   |   |               | -28,421                   | TBD            |
|   |   |               | 56,643                    | TBD            |
| Project 673276  |   |               | Exhibit R-2 (PE 0305110F) |                |

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 2000

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 07 - Operational System Development

## 0305110F Satellite Control Network

## PROJECT

**673276**

(U) C. Program Change Summary (\$ in Thousands) Continued

(U) Significant Program Changes:

**FY99:** Resource Management System (RMS) was restructured and descoped to provide AFSCN scheduling upgrades via the Electronic Schedule Dissemination (ESD) solution, and to provide collision avoidance functions at Schriever AFB through the Orbit Analysis Subsystem (OAS) solution. Antenna upgrade development funds were used for higher Air Force priorities, with antenna improvements now planned to be accomplished through a procurement-funded replacement program.

**FY01:** A reduction of \$9,400 was due to underexecution in FY99 and expected excess carry-forward through FY00, and into FY01. A \$7,300 adjustment properly aligned funds to OPAF to purchase hardware for the OAS follow-on project. A reduction of \$11,200 delayed the asset consolidation and the resource scheduling upgrade by one year.

(U) D. Other Program Funding Summary (\$ in Thousands)

|  | FY 1999 | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to Complete | Total Cost |
|--|---------|----------|----------|----------|----------|----------|----------|------------------|------------|
|  | Actual  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Continuing       | TBD        |
|  | 22,349  | 31,314   | 39,094   | 39,750   | 34,329   | 37,533   | 32,501   |                  |            |

(U) Other Procurement, AF;  
Budget Activity: 03; P-65;  
AFSCN

(U) E. Acquisition Strategy

The primary objective of the AFSCN I&M program is to reduce the cost of satellite control operations while maintaining or improving reliability, maintainability, operability, and capability of current systems. A combination of performance-based specifications and commercial/industrial specifications and standards was used for these acquisitions and was tailored to state only the Government's minimum performance needs. All developed contracting strategy was competitively awarded and utilized commercial practices and streamlining to the maximum extent possible. Starting in FY96, a new streamlined contracting strategy was implemented with the award of three new contracts. This strategy resulted in the Range & Communications Development Contract (RCDC), the Network Operations Upgrade Contract (NOUC), and the Network Integration Contract (NIC). Integration efforts had previously been spread across functional and contracting lines; but with the new AFSCN contracting strategy, the NIC contractor was given responsibility for inter-segment integration. Development upgrades are being designed to be flexible in meeting new satellite program requirements while minimizing sustainment costs by taking advantage of development efforts in satellite control over a large number of government and non-government development activities. These objectives can best be reached by developing systems with an open software design and a distributed system architecture using COTS products wherever feasible.

**(U) F. Schedule Profile**

FY 1999

FY 2000

FY 2001

Project 673276

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 2000

## BUDGET ACTIVITY

## 07 - Operational System Development

PE NUMBER AND TITLE

**0305110F Satellite Control Network**

## PROJECT

**673276**

(U) **F. Schedule Profile Continued**

(U) Network Operations Upgrades

(U) - ESD DD-250

(U) Communications Upgrades

(U) -RTS archival installation initiation

(U) - Archival DD-250

(U) - WANIU Functional/Physical Configuration Audit (FCA/PCA)

(U) - WANIU DD-250

(U) -OSR Incremental Demonstration Review-1

(U) -OSR Incremental Demonstration Review-2

(U) - OSR FCA/PCA

(U) -Begin External User DISN-ATM Connectivity

(U) Range Upgrades

(U) - Start Control and Status Upgrade

(U) - Begin ARTS upgrade

\*=completed; X=planned

1

|         |   |   |
|---------|---|---|
| FY 1999 | 2 | 3 |
|---------|---|---|

4

1

|                |   |
|----------------|---|
| <u>FY 2000</u> | 3 |
| 2              |   |

|         |   |   |
|---------|---|---|
| FY 2001 | 2 | 3 |
|---------|---|---|

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Exhibit R-2 (PE 0305110F)



| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |                        |                        |                |                |                    | DATE               | February 2000 |
|--|---|---|--------------------------|-------------------------|------------------------|------------------------|----------------|----------------|--------------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                     |                          |                         |                        | PROJECT                |                |                |                    |                    |               |
| 07 - Operational System Development                |   | 0305110F Satellite Control Network      |                          |                         |                        | 673276                 |                |                |                    |                    |               |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | Network Ops Upgrades (Command and Control Upgrades)                             |   |                          |                         |                        | FY 1999                | FY 2000        | FY 2001        |                    |                    |               |
| (U)  | Communications Upgrades   |   |                          |                         |                        | 2,000                  | 5,164          |                | 2,374              |                    |               |
| (U)  | Range Upgrades  |   |                          |                         |                        | 30,692                 | 31,228         |                | 24,171             |                    |               |
| (U)  | Network Integration and Systems Engineering                                     |   |                          |                         |                        | 0                      | 15,478         |                | 20,266             |                    |               |
| (U)  | Total   |   |                          |                         |                        | 12,651                 | 9,107          |                | 9,832              |                    |               |
| (U)  |   |   |                          |                         |                        | 45,343                 | 60,977         |                | 56,643             |                    |               |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | <u>Performing Organizations:</u>  |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Contractor or Government Performing Activity                                    | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001     | Budget to Complete | Total Program |
|  | Product Development Organizations   |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Multiple  | Multiple                                | Multiple                 | 72,296                  | 72,296                 | 72,296                 | 0              | 0              | 0                  | 0                  | 72,296        |
|  | Lockheed Martin   | C/CPAF                                  | Mar 96                   | 143,737                 | 143,737                | 40,318                 | 30,692         | 46,706         | 14,771             | 11,250             | 143,737       |
|  | Lockheed Martin   | C/CPAF                                  | Apr 96                   | 50,323                  | 50,323                 | 43,159                 | 2,000          | 5,164          | 0                  | 0                  | 50,323        |
|  | AFSCN Upgrades  | TBD                                     | Nov 00                   | TBD                     | TBD                    | 0                      | 0              | 0              | 32,040             | Continuing         | TBD           |
|  | Lockheed Martin   | C/CPAF                                  | May 96                   | 64,343                  | 64,343                 | 19,900                 | 12,651         | 9,107          | 9,832              | 12,853             | 64,343        |
|  | Support and Management Organizations  |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | N/A   |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Test and Evaluation Organizations   |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | N/A   |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | <u>Government Furnished Property:</u>   |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Contract  | Method/Type or Funding Vehicle          | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program      |               |
|  | Item Description  |   |                          |                         |                        |                        |                |                |                    |                    |               |

Project 673276
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Exhibit R-3 (PE 0305110F)

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                                    |          |                        |                |                |                |                    |               | DATE | February 2000 |
|--|-------------|------------------------------------|----------|------------------------|----------------|----------------|----------------|--------------------|---------------|------|---------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE                |          |                        |                | PROJECT        |                |                    |               |      |               |
| 07 - Operational System Development                |             | 0305110F Satellite Control Network |          |                        |                | 673276         |                |                    |               |      |               |
| (U) Government Furnished Property Continued:       |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Contract   |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Item   | Method/Type | Award or                           | Delivery | Total Prior            | Budget         | Budget         | Budget         | Budget to          | Total         |      |               |
|  | or Funding  | Obligation                         | Date     | to FY 1999             | FY 1999        | FY 2000        | FY 2001        | Complete           | Program       |      |               |
| Description  | Vehicle     |                                    |          |                        |                |                |                |                    |               |      |               |
| Product Development Property                       |             |                                    |          |                        |                |                |                |                    |               |      |               |
| N/A  |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Support and Management Property                    |             |                                    |          |                        |                |                |                |                    |               |      |               |
| N/A  |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Test and Evaluation Property                       |             |                                    |          |                        |                |                |                |                    |               |      |               |
| N/A  |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Subtotals  |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Subtotal Product Development                       |             |                                    |          | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |      |               |
|  |             |                                    |          | 175,673                | 45,343         | 60,977         | 56,643         | TBD                | TBD           |      |               |
| Subtotal Support and Management                    |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Subtotal Test and Evaluation                       |             |                                    |          |                        |                |                |                |                    |               |      |               |
| Total Project                                      |             |                                    |          | 175,673                | 45,343         | 60,977         | 56,643         | TBD                | TBD           |      |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                            |                          |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|----------------------------|--------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                            | PE NUMBER AND TITLE      |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                            | 0305111F Weather Service |                  |                  |                  |                  |                  |                  |                  | 672738     |               |
|  | COST (\$ in Thousands)     | FY 1999 Actual           | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 672738   | Weather Service            | 9,846                    | 18,910           | 19,942           | 11,489           | 14,606           | 16,781           | 17,015           | Continuing       | TBD        |               |
|  | Quantity of RDT&E Articles | 0                        | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p><b>(U) A. Mission Description</b></p> <p>This program provides for the modification, sustainment, and acquisition of meteorological and space environmental hardware and software supporting the observing and forecasting needs of worldwide Air Force and Army operations, as well as Special Operation Forces (SOF) and other government agencies. It provides fixed and transportable equipment supporting the Expeditionary Aerospace Force (EAF) concept with weather observing and forecasting capabilities at in-garrison and deployed locations. Efforts include: (a) Cloud Depiction and Forecast System II (CDFS II) replaces logistically unsupportable mainframe computers at the Air Force Weather Agency (AFWA), Offutt AFB, and upgrades satellite data processing, cloud depiction and forecasting weather support functions for operational commanders and classified national programs; (b) Global Theater Weather Analysis and Prediction System (GTWAPS) acquires theater weather models and associated hardware to improve the AFWA theater support capabilities; (c) Tactical Weather Radar (TWR) provides lightweight, portable Doppler weather radar to support deployed combat operations worldwide; (d) Space Weather Analysis and Forecast System (SWAFS) builds space environmental support and modernizes software capabilities to meet warfighter requirements; (e) Meteorological Operations Capability (MOC) Forecast System 21st Century (FS-21) provides user workstations capable of ingesting all sources of weather information to provide timely and precisely tailored weather products for the warfighter and supports the 'train as you fight' concept by assuring fixed and deployable systems are the same; (f) Weather Data Analysis (WDA) provides a fused infrastructure for the assimilation of advanced models, radar, lightning, and satellite data into a single user interface for the timely analysis and production of tailored weather products [In FY99 this project was named Satellite Data Handling System II (SDHS II). This name change provides consistency with the five core competency areas--see following paragraph.]; (g) MOC Observing System 21st Century (OS-21) provides a range of weather observing capabilities to include a fully automated capability for fixed and deployed locations and integrates both manual and remote systems and (h) Small Tactical Terminal (STT) provides worldwide tactical users with a survivable 'first-in' source of meteorological satellite data, processed by small portable terminals in forward areas of conflict [Funding aligned to PE 35111F in FY01. Prior year funding in PE 35160F, Defense Meteorological Satellite Program.]. Additionally, in FY99 in response to USAFE Combat Mission Needs Statement 98-008 generated during Operation Allied Force, the Target Scale Weather Forecast Model (TSWFM) was developed to provide Air Tasking Order planners the ability to anticipate and exploit weather for air operations by providing greater resolution and accuracy in weather forecasts.</p> <p>(U) In FY00, Air Force Weather (AFW) programs are being aligned under the five core competency areas of Weather Data Collection, Analysis, Forecasting, Product Tailoring/Warfighter Applications, and Dissemination described in the AFW Mission Support Plan. Through this alignment, AFW will ensure an integrated and systems-oriented approach to program management decisions. Weather Data Collection will absorb TWR and MOC sensor program efforts in FY00 and beyond.</p> |                            |                          |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 672738

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                           |   | DATE | February 2000             |
|---|---------------------------|---|------|---------------------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE       | PROJECT   |      |                           |
| 07 - Operational System Development   | 0305111F Weather Service  | 672738  |      |                           |
| (U) A. Mission Description Continued  |                           |   |      |                           |
| Analysis will continue the SDHS II effort as WDA and ensure the interoperability of the AFW processing infrastructure with users and data sources. Weather Forecasting will continue both GTWAPS and CDFS II and begin merging strategic and operational level forecasting for greater efficiency. Product Tailoring and Warfighter Applications will continue development of MOC FS-21 which is the cornerstone of AFW support to operational users. These consolidations and realignments are critical to AFW Re-Engineering and implementation of the CSAF-directed and approved AFW Strategic Plan. |                           |   |      |                           |
| (U)   | FY 1999 (\$ in Thousands) |   |      |                           |
| (U)   | \$4,855                   | CDFS II: Continued development of cloud depiction and forecast software   |      |                           |
| (U)   | \$1,829                   | GTWAPS: Continued operational software development for incremental IOCs   |      |                           |
| (U)   | \$250                     | TWR: SPO support and continued development of system interfaces with Forecast and Analysis systems  |      |                           |
| (U)   | \$1,327                   | MOC FS-21: Prepare Milestones I/II/III documentation  |      |                           |
| (U)   | \$40                      | SDHS II: Initiated assessment of operational alternative study and preparation of Milestones I/II/III documentation   |      |                           |
| (U)   | \$845                     | SWAFS: Performed design and architecture study in preparation for Milestones I/II and possibly III and to accommodate incremental operational software deliveries                                   |      |                           |
| (U)   | \$700                     | TSWFM: Developed software for fine scale target forecasting in response to Combat Mission Needs Statement #98-008.  |      |                           |
| (U)   | \$9,846                   | Total   |      |                           |
| (U)   | FY 2000 (\$ in Thousands) |   |      |                           |
| (U)   | \$500                     | TWR: SPO support and continue development of system interfaces with Forecast and Analysis systems (Weather Data Collection)   |      |                           |
| (U)   | \$1,127                   | MOC OS-21: Prepare Milestones I/II/III documentation, achieve Milestones I/II/III, and begin integration and development of component sensor systems (Weather Data Collection)                      |      |                           |
| (U)   | \$1,700                   | WDA [formerly SDHS II]: Achieve Milestones I/II/III and begin operational software development for enhanced analysis infrastructure (Analysis)  |      |                           |
| (U)   | \$3,394                   | CDFS II: Continue development of cloud depiction and forecast software (Weather Forecasting)  |      |                           |
| (U)   | \$2,246                   | GTWAPS: Continue operational software development for incremental IOCs (Weather Forecasting)  |      |                           |
| (U)   | \$6,818                   | SWAFS: Achieve Milestones I/II and possibly III and begin software development for incremental deliveries (Weather Forecasting)   |      |                           |
| (U)   | \$3,125                   | MOC FS-21: Complete Milestones I/II/III documentation, achieve Milestones I/II/III, and award a contract for FS-21 procurement and software integration (Product Tailoring/Warfighter Applications) |      |                           |
| (U)   | \$18,910                  | Total   |      |                           |
| Project 672738  |                           | Page 2 of 6 Pages   |      | Exhibit R-2 (PE 0305111F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |   |            |  |                                 |                                 |
|---|---|------------|--|---------------------------------|---------------------------------|
| BUDGET ACTIVITY   |   |            |  | DATE                            | PROJECT                         |
| PE NUMBER AND TITLE   |   |            |  |                                 |                                 |
| <b>07 - Operational System Development</b>  |   |            |  | <b>0305111F Weather Service</b> | <b>February 2000<br/>672738</b> |
| (U) <u>A. Mission Description Continued</u>   |   |            |  |                                 |                                 |
| (U)   | FY 2001 (\$ in Thousands)                     |            |  |                                 |                                 |
| (U)   | \$400   | TWR:       | SPO support and continue development of system interfaces with Forecast and Analysis systems (Weather Data Collection)               |                                 |                                 |
| (U)   | \$4,366                                       | MOC OS-21: | Continue development and integration of component sensor systems (Weather Data Collection)   |                                 |                                 |
| (U)   | \$3,480                                       | WDA:       | Continue software development for enhanced analysis infrastructure (Analysis)  |                                 |                                 |
| (U)   | \$996   | CDFS II:   | Continue development of cloud depiction and forecast software and achieve FOC (Weather Forecasting)                                  |                                 |                                 |
| (U)   | \$4,581                                       | SWAFS:     | Continue software development for incremental deliveries (Weather Forecasting)   |                                 |                                 |
| (U)   | \$3,238                                       | MOC FS-21: | Continue software development and integration with regional and tactical weather systems (Product Tailoring/Warfighter Applications) |                                 |                                 |
| (U)   | \$2,881                                       | STT:       | Continue development of software for integration of satellite weather data in tactical environment. (Weather Data Collection)        |                                 |                                 |
| (U)   | \$19,942                                      | Total      |  |                                 |                                 |
| (U) <u>B. Budget Activity Justification</u>   |   |            |  |                                 |                                 |
| This effort is in Budget Activity 7, Operational System Development, because it supports operational software development and system tests associated with the upgrade and replacement of currently operational systems, systems already in production, and systems with approved production funds in the DoD budget. |   |            |  |                                 |                                 |
| (U) <u>C. Program Change Summary (\$ in Thousands)</u>  |   |            |  |                                 |                                 |
| (U)   | Previous President's Budget (FY 2000 PBR)     | FY 1999    | FY 2000  | FY 2001                         | Total Cost                      |
| (U)   | Appropriated Value                            | 10,398     | 19,069   | 15,089                          | TBD                             |
| (U)   | Adjustments to Appropriated Value             | 10,649     | 19,069   |                                 |                                 |
| (U)   | a. Congressional/General Reductions           | -251       | -55  |                                 |                                 |
| (U)   | b. Small Business Innovative Research         | -340       |  |                                 |                                 |
| (U)   | c. Omnibus or Other Above Threshold Reprogram |            | -104   |                                 |                                 |
| (U)   | d. Below Threshold Reprogram                  | -157       |  |                                 |                                 |
| (U)   | e. Rescissions                                | -55        |  |                                 |                                 |
| (U)   | f. Other                                      |            |  |                                 |                                 |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR |            |  | 4,853                           | TBD                             |
| (U)   | Current Budget Submit/FY 2001 PBR             | 9,846      | 18,910   | 19,942                          | TBD                             |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                 | DATE                      | February 2000   |
|--|---------------------------------|---------------------------|-----------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE             | PROJECT                   |                 |
| <b>07 - Operational System Development</b>   | <b>0305111F Weather Service</b> | <b>672738</b>             |                 |
| <b>(U) C. Program Change Summary (\$ in Thousands) Continued</b>   |                                 |                           |                 |
| <b>(U) Significant Program Changes:</b>  |                                 |                           |                 |
| FY01: \$2,090K transferred from SWAFS other procurement - AF to RDT&E.<br>\$2,941K transferred from PE35160F to support STT.   |                                 |                           |                 |
| <b>(U) D. Other Program Funding Summary (\$ in Thousands)</b>  |                                 |                           |                 |
|  | <u>FY 1999</u>                  | <u>FY 2000</u>            | <u>FY 2001</u>  |
|  | <u>Actual</u>                   | <u>Estimate</u>           | <u>Estimate</u> |
| (U) Other Procurement, AF,<br>Weather Service (PE35111F<br>WSC 833070)   | 47,949                          | 41,850                    | 48,599          |
|  |                                 | <u>FY 2002</u>            | <u>FY 2003</u>  |
|  |                                 | <u>Estimate</u>           | <u>Estimate</u> |
|  |                                 | 48,125                    | 45,084          |
|  |                                 | <u>FY 2004</u>            | <u>FY 2005</u>  |
|  |                                 | <u>Estimate</u>           | <u>Estimate</u> |
|  |                                 | 45,409                    | 46,572          |
|  |                                 | <u>Cost to</u>            | <u>Cost to</u>  |
|  |                                 | <u>Complete</u>           | <u>Complete</u> |
|  |                                 | Continuing                | Continuing      |
|  |                                 |                           | TBD             |
| <b>(U) E. Acquisition Strategy</b>   |                                 |                           |                 |
| All major contracts within this program used precompeted DoD contract vehicles or were awarded after full and open competition. Programs support DII COE compliance and use an evolutionary acquisition strategy with a series of incremental IOCs and software releases. This approach accommodates refinement and prioritization of user requirements and improves adaptability to evolving commercial activities. |                                 |                           |                 |
| <b>(U) F. Schedule Profile</b>   |                                 |                           |                 |
|  | <u>FY 1999</u>                  | <u>FY 2000</u>            | <u>FY 2001</u>  |
|  | 1                               | 2                         | 3               |
|  |                                 | 4                         | 1               |
|  |                                 |                           | 2               |
|  |                                 |                           | 3               |
|  |                                 |                           | 4               |
| (U) CDIFS II FOC   |                                 |                           | X               |
| (U) SWAFS Milestones I/II and possibly III   |                                 | X                         |                 |
| (U) MOC FS-21 Milestones I/II/III  |                                 | X                         |                 |
| (U) MOC OS-21 Milestones I/II/III  |                                 | X                         |                 |
| (U) SDHS II/WDA Milestones I/II/III  |                                 |                           | X               |
| X - Denotes planned event  |                                 |                           |                 |
| Project 672738   |                                 | Exhibit R-2 (PE 0305111F) |                 |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                           | DATE               | February 2000 |
|--|--|---|--------------------------|---------------------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                     |                          |                           | PROJECT            |               |
| 07 - Operational System Development                |  | 0305111F Weather Service                |                          |                           | 672738             |               |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                           |                    |               |
| (U)  | 1st Article Development  | FY 1999                                 | FY 2000                  | FY 2001                   |                    |               |
| (U)  | System Software Integration  | 0                                       | 1,205                    | 0                         |                    |               |
| (U)  | System Engineering Support   | 202                                     | 1,444                    | 2,767                     |                    |               |
| (U)  | Contractor Engineering Support   | 1,621                                   | 2,484                    | 5,778                     |                    |               |
| (U)  | Software Development   | 999                                     | 2,591                    | 2,715                     |                    |               |
| (U)  | Travel   | 5,873                                   | 9,770                    | 7,498                     |                    |               |
| (U)  | Program Management Support   | 213                                     | 300                      | 317                       |                    |               |
| (U)  | Laboratory Support   | 938                                     | 1,016                    | 867                       |                    |               |
| (U)  | Total  | 0                                       | 100                      | 0                         |                    |               |
| (U)  |  | 9,846                                   | 18,910                   | 19,942                    |                    |               |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                           |                    |               |
| (U)  | Performing Organizations:  |   |                          |                           |                    |               |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC   | Project Office EAC | Total Program |
| Product Development Organizations                  |  |   |                          |                           |                    |               |
|  | Phillips Lab   | MIPR                                    | May 94                   | 270                       | 270                | 270           |
|  | CalTech  | LOE                                     | Jun 94                   | 1,172                     | 1,172              | 1,172         |
|  | CSC  | LOE                                     | Jan 94                   | 2,127                     | 2,127              | 2,127         |
|  | GTE  | FFP/PR                                  | Oct 90                   | 13,064                    | 13,064             | 13,064        |
|  | PRISM(Raytheon)  | LOE                                     | Jan 93                   | 3,497                     | 3,497              | 3,497         |
|  | PRISM (Hughes)   | LOE                                     | Jan 93                   | 3,396                     | 3,396              | 3,396         |
|  | Sterling   | CPAF                                    | Jun 95                   | 21,621                    | 13,309             | 21,945        |
|  | Air Weather Svc (CDFS II related work)                                   | MIPR                                    | 4FY95                    | 2,900                     | 2,800              | 2,900         |
|  | Hughes   |   | Sep 95                   | 1,682                     | 1,682              | 1,682         |
|  | DNA  | MIPR                                    | Jan 95                   | 100                       | 100                | 100           |
|  | CCPL (TRW) [GTWAPS]  | LOE                                     | Dec 97                   | 3,986                     | 996                | TBD           |
| Project 672738                                     |  |   |                          |                           |                    |               |
|  |  |   |                          | Page 5 of 6 Pages         |                    |               |
|  |  |   |                          | Exhibit R-3 (PE 0305111F) |                    |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |  |  |        |  |       |       |       |       | DATE                     | February 2000 | PROJECT    |       |
|--|--|--|--|--------|--|-------|-------|-------|-------|--------------------------|---------------|------------|-------|
| BUDGET ACTIVITY                                    |  |  |  |        |  |       |       |       |       | PE NUMBER AND TITLE      |               |            |       |
| 07 - Operational System Development                |  |  |  |        |  |       |       |       |       | 0305111F Weather Service |               |            |       |
| (U) Performing Organizations Continued:            |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Product Development Organizations                  |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Raytheon   |  |  |  | Sep 98 |  | 1,184 | 1,184 | 232   | 250   | 415                      | 351           | 0          | 1,248 |
| TBD MOC FS-21                                      |  |  |  | TBD    |  | TBD   | TBD   | 0     | 0     | 1,842                    | 2,143         | Continuing | TBD   |
| TBD MOC OS-21                                      |  |  |  | TBD    |  | TBD   | TBD   | 0     | 0     | 700                      | 3,279         | Continuing | TBD   |
| TBD SDHS II/WDA                                    |  |  |  | TBD    |  | TBD   | TBD   | 0     | 0     | 1,073                    | 2,141         | Continuing | TBD   |
| TASC   |  |  |  | Sep 99 |  | 741   | 741   | 0     | 741   | 0                        | 0             | 0          | 741   |
| CCPL (TRW) [SWAFS]                                 |  |  |  | Dec 99 |  | 4,780 | 4,780 | 0     | 0     | 4,780                    | 0             | 0          | 4,780 |
| TBD SWAFS  |  |  |  | TBD    |  | TBD   | TBD   | 0     | 14    | 2,176                    | 4,269         | Continuing | TBD   |
| TBD STT*   |  |  |  | TBD    |  | TBD   | TBD   | 0     | 0     | 0                        | 2,881         | Continuing | TBD   |
| *Note: prior to FY01, STT in PE 35160F.            |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Support and Management Organizations               |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Electronic Systems Center (ESC)                    |  |  |  |        |  |       |       | 824   | 900   | 1,072                    | 835           | Continuing | TBD   |
| Space and Missile Systems Center (SMC)             |  |  |  |        |  |       |       | 40    | 188   | 172                      | 204           | Continuing | TBD   |
| MITRE/ Aerospace/ITSP                              |  |  |  |        |  |       |       | 2,151 | 1,062 | 2,884                    | 3,097         | Continuing | TBD   |
| Test and Evaluation Organizations                  |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Subtotals  |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Subtotal Product Development                       |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Subtotal Support and Management                    |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Subtotal Test and Evaluation                       |  |  |  |        |  |       |       |       |       |                          |               |            |       |
| Total Project                                      |  |  |  |        |  |       |       |       |       |                          |               |            |       |
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Project 672738

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Exhibit R-3 (PE 0305111F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                 |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---------------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                                 | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  |            |               |
| 07 - Operational System Development  |                                 | 0305114F Air Traffic Control/Approach/Landing System (ATCALS) |                  |                  |                  |                  |                  |                  |                  |            |               |
|  |                                 | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
|  | COST (\$ in Thousands)          |   |                  |                  |                  |                  |                  |                  |                  |            |               |
|  | Total Program Element (PE) Cost | 2,870   | 7,279            | 18,093           | 12,279           | 5,579            | 5,885            | 5,995            | Continuing       | TBD        |               |
| 672026   | System Support                  | 252   | 231              | 252              | 237              | 246              | 194              | 193              | Continuing       | TBD        |               |
| 673587   | Air Traffic Control Systems     | 2,618   | 7,048            | 17,841           | 12,042           | 5,333            | 5,691            | 5,802            | Continuing       | TBD        |               |
|  | Quantity of RDT&E Articles      | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b><br/> Research, development, test, and engineering activities in this program originally focused on developing the Military Microwave Landing System Avionics (MMLSA) and acquisition of the commercially developed Commercial Microwave Landing System Avionics (CMLSA) as part of a two-decade effort to replace the Precision Approach Radars and Instrument Landing Systems that provide precision landing services even at night and in bad weather. However, with the advent of space-based technologies, the MMLSA program was canceled in the late 1980s. The focus of RDT&amp;E activities in this program turned to a comprehensive modernization of fixed and mobile Air Traffic Control and Landing Systems (ATCALS) that will bridge the gap between the current aging fleet of ground-based ATCALS and future space-based infrastructure. In particular, the program is focused on developing systems that increase commonality and interoperability, reduce manpower requirements, reduce logistics supportability problems, and posture the service to move to space-based aerospace navigation infrastructure when that becomes feasible and affordable (in the second and third decades of the next century). Additionally, this program investigates and exploits emerging technologies in critical ATCALS support areas such as air traffic controller training and terminal instrument procedures development. This program complements other safety of flight and airspace access programs such as Global Air Traffic Management and Global Access, Navigation, and Safety. Project 2026 funds ongoing liaison and interagency cooperative studies, between the USAF Air Traffic Control and Landing Systems program office and various organizations to include other Services, the Federal Aviation Administration (FAA) and ICAO. Project 3587 funds research and development of new air traffic control surveillance, positioning, and precision approach capabilities (including the Mobile Approach Control System (MACS) which replaces non-standard, unsupportable, large footprint mobile radar approach systems with a common, easily-transportable system for both the Air National Guard and REGAF). project 3587 also completes the</p> |                                 |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| <p>(U) <b>B. Budget Activity Justification</b><br/> This program is in budget activity 7 - Operational System Development, because it upgrades avionics in currently fielded weapon systems.</p>   |                                 |   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |  |         |         |            |  | DATE | February 2000 |
|---|--|---------|---------|------------|--|------|---------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE  |         |         |            |  |      |               |
| <b>07 - Operational System Development</b>  | <b>0305114F Air Traffic Control/Approach/Landing System (ATCALs)</b> |         |         |            |  |      |               |
| (U) C. Program Change Summary (\$ in Thousands)   | FY 1999  | FY 2000 | FY 2001 | Total Cost |  |      |               |
| (U) Previous President's Budget (FY 2000 PBR)   | 4,389  | 5,588   | 18,254  |            |  |      |               |
| (U) Appropriated Value  | 4,729  | 7,344   |         |            |  |      |               |
| (U) Adjustments to Appropriated Value   | -340   |         |         |            |  |      |               |
| a. Congressional/General Reductions   | -145   |         |         |            |  |      |               |
| b. Small Business Innovative Research   |  |         |         |            |  |      |               |
| c. Omnibus or Other Above Threshold Reprogram   | -1,358   |         |         |            |  |      |               |
| d. Below Threshold Reprogram  | -16  | -65     |         |            |  |      | TBD           |
| e. Rescissions  |  |         |         |            |  |      |               |
| f. Other  |  |         |         |            |  |      |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR   |  |         | -161    |            |  |      |               |
| (U) Current Budget Submit/FY 2001 PBR   | 2,870  | 7,279   | 18,093  |            |  |      | TBD           |
| (U) Significant Program Changes:  |  |         |         |            |  |      |               |
| Funding:  |  |         |         |            |  |      |               |
| 1. FY 99: Below-Threshold Reprogramming of \$474 made to support higher priority programs.  |  |         |         |            |  |      |               |
| 2. FY00 upward adjustment transfers RDT&E funding from the National Aerospace System (NAS) program (PE 305137F) to ATCALs to consolidate small RDT&E lines. The funds will still be used to complete testing and fielding of NAS systems (radars, voice switches, data automation systems, and data systems designed to assist in management of special use airspace) |  |         |         |            |  |      |               |
| 3. FY01 reflects -\$161 adjustment for revised inflation assumptions  |  |         |         |            |  |      |               |

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 Exhibit R-2 (PE 0305114F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                                  |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|----------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |                                  | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |                                  | 0305114F Air Traffic Control/Approach/Landing  |                  |                  |                  |                  |                  |                  |                  | 672026     |               |
|   |                                  | System (ATCALS)  |                  |                  |                  |                  |                  |                  |                  |            |               |
| COST (\$ in Thousands)  |                                  | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 672026  | System Support                   | 252  | 231              | 252              | 237              | 246              | 194              | 193              | Continuing       | TBD        |               |
| <p>(U) <b>A. Mission Description</b><br/>           This continuing effort funds ongoing liaison and interagency cooperative studies, as well as interoperability analyses between the USAF Air Traffic Control and Landing Systems (ATCALS) Program Office and various organizations which include the other services, the Federal Aviation Administration (FAA), and the International Civil Aviation Organization (ICAO). Continues mission support for the ATCALS programs including several joint efforts with the FAA. RDT&amp;E funds are used to resolve or minimize technical interface problems associated with interoperability between existing or planned DoD/FAA ATCALS equipment and capabilities.</p> |                                  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands)        |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$92                             | Supported Air Traffic Control and Landing Systems (ATCALS) projects                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$111                            | Conducted interoperability and interface evaluations                                 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$49                             | Supported precision landing systems studies for the Joint Special Operations Command |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$252                            | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands)        |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$88                             | Support for all ATCALS projects  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$96                             | Conduct interoperability and interface evaluations                                   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$47                             | Support for precision landing studies for JSOC                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$231                            | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2001 (\$ in Thousands)        |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$90                             | Support for all ATCALS projects  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$113                            | Conduct interoperability and interface evaluations                                   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$49                             | Support for precision landing studies for JSOC                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$252                            | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>B. Project Change Summary</b> |  |                  |                  |                  |                  |                  |                  |                  |            |               |

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Exhibit R-2A (PE 0305114F)

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| BUDGET ACTIVITY                     |   | RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)                                    |          |          |          |          |          |          |                  |            |   | DATE              | February 2000 |
|-------------------------------------|---|---|----------|----------|----------|----------|----------|----------|------------------|------------|---|-------------------|---------------|
| 07 - Operational System Development |   | PE NUMBER AND TITLE<br>0305114F Air Traffic Control/Approach/Landing<br>System (ATCALs) |          |          |          |          |          |          |                  |            |   | PROJECT<br>672026 |               |
| (U)                                 | C. Other Program Funding Summary (\$ in Thousands)  | FY 1999   | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to Complete | Total Cost |   |                   |               |
|                                     |   | Actual  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate |                  |            |   |                   |               |
| (U)                                 | AF RDT&E  |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | Other APPN  |   |          |          |          |          |          |          |                  |            |   |                   |               |
|                                     | N/A   |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | D. Acquisition Strategy   |   |          |          |          |          |          |          |                  |            |   |                   |               |
|                                     | Engineering Manufacturing Development, Fixed Price Incentive Fee (FPIF), No Non-Developmental Items (NDI)   |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | E. Schedule Profile   |   |          |          |          |          |          |          |                  |            |   |                   |               |
|                                     |   | 1   | 2        | 3        | 4        | 1        | 2        | 3        | 4                | 1          | 2 | 3                 | 4             |
| (U)                                 | Acquisition Milestones  |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | MACS Acquisition Strategy Approved  |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | MACS RFP for Airport Surveillance Radar (ASR)/Operations  |   |          |          |          | X        |          |          |                  |            |   |                   |               |
|                                     | Systems   |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | MACS RFP for Precision Approach Radar (PAR) System (See footnote)   |   |          |          |          |          |          |          |                  | X          |   |                   |               |
| (U)                                 | Contract Milestone  |   |          |          |          |          |          |          |                  |            |   |                   |               |
| (U)                                 | MACS source selection for ASR/Ops   |   |          |          |          |          |          | X        |                  |            |   |                   |               |
| (U)                                 | MACS source selection for PAR (See footnote)  |   |          |          |          |          |          |          |                  |            |   | X                 |               |
| (U)                                 | Conduct Precision Landing Studies   |   |          |          |          |          |          |          |                  | X          |   |                   |               |
|                                     | NOTE: To save costs development and long-term sustainment costs, USAF and the US Navy will cooperatively develop the Precision Approach Radar (PAR) system associated with MACS. The Navy is performing all acquisition/contracting actions associated with the PAR system, and the timelines shown reflect the Navy's estimate provided to the System Program Office (HQ ESC/GA) |   |          |          |          |          |          |          |                  |            |   |                   |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |            | DATE                      | February 2000 | PROJECT   |
|--|--|---|------------|---------------------------|---------------|-----------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                           |            |                           |               |           |
| 07 - Operational System Development                |  | 0305114F Air Traffic Control/Approach/Landing |            | 672026                    |               |           |
|  |  | System (ATCALs)                               |            |                           |               |           |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |            | FY 1999                   | FY 2000       | FY 2001   |
| (U)  | System Engineering   |   |            | 148                       | 141           | 146       |
| (U)  | Contract Engineering   |   |            | 81                        | 70            | 86        |
| (U)  | Test and Evaluation Support  |   |            | 0                         | 0             | 0         |
| (U)  | Program Management Support   |   |            | 11                        | 10            | 10        |
| (U)  | Travel   |   |            | 12                        | 10            | 10        |
| (U)  | Total  |   |            | 252                       | 231           | 252       |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |            |                           |               |           |
| (U)  | Performing Organizations:  |   |            |                           |               |           |
|  | Contractor or  | Contract                                      | Performing | Total Prior               | Budget        | Budget to |
|  | Government   | Method/Type                                   | Activity   | to FY 1999                | FY 2000       | Complete  |
|  | Performing   | Award or                                      | EAC        |                           |               |           |
|  | Activity   | Obligation                                    |            |                           |               |           |
|  | Vehicle  | Date  |            |                           |               |           |
|  | Product Development Organizations  |   |            |                           |               |           |
|  | N/A  |   |            |                           |               |           |
|  | Support and Management Organizations                                     |   |            |                           |               |           |
|  | Various  | Multiple                                      | N/A        | 1,018                     | 252           | 252       |
|  | Test and Evaluation Organizations  |   |            |                           |               |           |
|  | N/A  |   |            |                           |               |           |
| (U)  | Government Furnished Property:   |   |            |                           |               |           |
|  | Contract   |   |            |                           |               |           |
|  | Method/Type  | Award or                                      | Delivery   | Total Prior               | Budget        | Budget to |
|  | or Funding   | Obligation                                    | Date       | to FY 1999                | FY 2000       | Complete  |
|  | Vehicle  | Date  |            |                           |               |           |
|  | Product Development Property   |   |            |                           |               |           |
|  | N/A  |   |            |                           |               |           |
| Project 672026                                     |  |   |            | Exhibit R-3 (PE 0305114F) |               |           |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   | DATE                      | February 2000     | PROJECT               |
|--|---|---------------------------|-------------------|-----------------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE                           |                           |                   |                       |
| 07 - Operational System Development                | 0305114F Air Traffic Control/Approach/Landing |                           |                   | 672026                |
|  | System (ATCALS)                               |                           |                   |                       |
| (U) Government Furnished Property Continued:       |   |                           |                   |                       |
| Support and Management Property                    |   |                           |                   |                       |
| N/A  |   |                           |                   |                       |
| Test and Evaluation Property                       |   |                           |                   |                       |
| N/A  |   |                           |                   |                       |
| Subtotals  |   |                           |                   |                       |
| Subtotal Product Development                       |   |                           |                   |                       |
| Subtotal Support and Management                    |   |                           |                   |                       |
| Subtotal Test and Evaluation                       |   |                           |                   |                       |
| Total Project                                      |   |                           |                   |                       |
|  |   | Total Prior<br>to FY 1999 | Budget<br>FY 1999 | Budget<br>FY 2000     |
|  |   |                           |                   | Budget<br>FY 2001     |
|  |   |                           |                   | Budget to<br>Complete |
|  |   |                           |                   | Total<br>Program      |
|  |   | 1,018                     | 252               | 231                   |
|  |   | 1,018                     | 252               | 231                   |
|  |   |                           |                   | 252                   |
|  |   |                           |                   | 1,753                 |
|  |   |                           |                   | 1,753                 |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |  | DATE  |                  | February 2000    |                  |                  |                  |                  |                  |            |
|--|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE   |                  | PROJECT          |                  |                  |                  |                  |                  |            |
| 07 - Operational System Development  |  | 0305114F Air Traffic Control/Approach/Landing System (ATCALS) |                  | 673587           |                  |                  |                  |                  |                  |            |
| COST (\$ in Thousands)   |  | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
| 673587 Air Traffic Control Systems   |  | 2,618   | 7,048            | 17,841           | 12,042           | 5,333            | 5,691            | 5,802            | Continuing       | TBD        |
| <p><b>(U) A. Mission Description</b></p> <p>This project funds research and development of new air traffic control surveillance, positioning, and precision approach capabilities (including the Mobile Approach Control System (MACS) which replaces non-standard, unsupportable, large footprint mobile radar approach systems with a common, easily-transportable system for both the Air National Guard and REGAF). This year, the project completed development of a multi-mode receiver (the Precision Landing System) which will equip every C-17 with the capability to fly approaches using a variety of landing aids, including microwave landing systems and Instrument Landing Systems located close to sources of interference. This project also conducts development and testing for the National Aerospace System (NAS) to support fielding of NAS hardware and software for radar systems, digital voice switches, and specialized data automation systems. Additionally, this project funds the development of a replacement system for automated development of terminal instrument procedures (the precisely-measured documents that tell pilots how to fly during final approach to avoid obstacles). This project will also investigate low-cost, high-return methods for improving interoperability between US air navigation systems and those of allied nations, especially the NATO countries.</p> |  |   |                  |                  |                  |                  |                  |                  |                  |            |
| (U) FY 1999 (\$ in Thousands)  | Continued to perform platform integration and system engineering analyses<br>Completed PLS flight testing /certification<br>Mobile Approach Control System Analysis of Alternatives<br>Air Force Terminal Instrument Procedures Analysis of Alternatives<br>Total  |   |                  |                  |                  |                  |                  |                  |                  |            |
| (U) FY 2000 (\$ in Thousands)  | Begin Mobile Approach Control System Development<br>Support field to ensure USAF ATC interoperability with FAA and NATO<br>Begin technology insertion studies to determine USAF ATC applicability with coalition allies<br>Begin development of Air Force Terminal Instrument Procedures System<br>Identify interface improvements for NAS systems<br>Perform NAS risk reduction studies/software interoperability analyses<br>Complete NAS radar/automation testing |   |                  |                  |                  |                  |                  |                  |                  |            |

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Exhibit R-2A (PE 0305114F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   | DATE             | February 2000    |                  |                  |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|--------------|--|--|--|--|--|--|--|--|--|--|-------|---|-----|-----|-----|--|--|--|--|----------------|---|---|---|---|---|---|---|------------|-----|------------------------------|--|--|--|--|--|--|--|--|--|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE   | PROJECT          |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
| 07 - Operational System Development  | 0305114F Air Traffic Control/Approach/Landing System (ATCALS) | 673587           |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>A. Mission Description Continued</b></p> <p>(U) <b>FY 2000 (\$ in Thousands) Continued</b></p> <p>(U) \$802 Complete development of NAS Military Airspace Management System</p> <p>(U) \$7,048 Total</p> <p>(U) <b>FY 2001 (\$ in Thousands)</b></p> <p>(U) \$15,759 Continue Mobile Approach Control System Development</p> <p>(U) \$419 Support field activities to ensure USAF ATC interoperability with FAA and NATO</p> <p>(U) \$494 Continue technology insertion studies to determine USAF ATC applicability with coalition allies</p> <p>(U) \$540 Continue development of Air Force Terminal Instrument Procedures System</p> <p>(U) \$629 Investigate improvements in Mode S capabilities</p> <p>(U) \$17,841 Total</p> <p>(U) <b>B. Project Change Summary</b></p> <p>1. NOTE: Program awaiting \$7,890 reclassification of FY99 OPAF funds to RDT&amp;E to support MACS development</p> <p>2. FY00 upward adjustment transfers RDT&amp;E funding from the National Airspace System (NAS) program (PE 305137F) to ATCALS to consolidate small RDT&amp;E lines. The funds will still be used to complete testing and fielding of NAS systems (radars, voice switches, data automation systems, and data systems designed to assist in management of special use airspace)</p> <p>4. FY01 includes approximately \$150 reduction to account for revised economic assumptions</p> <p>(U) <b>C. Other Program Funding Summary (\$ in Thousands)</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1999 Actual</th> <th>FY 2000 Estimate</th> <th>FY 2001 Estimate</th> <th>FY 2002 Estimate</th> <th>FY 2003 Estimate</th> <th>FY 2004 Estimate</th> <th>FY 2005 Estimate</th> <th>Cost to Complete</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) AF RDT&amp;E</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) National Airspace System program (PE 305137F) (See footnote)</td> <td>1,787</td> <td>0</td> <td>201</td> <td>203</td> <td>206</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Other APPN</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>Continuing</td> <td>TBD</td> </tr> <tr> <td>(U) Aircraft procurement, AF</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Project 673587</p> <p>Page 8 of 12 Pages</p> <p>Exhibit R-2A (PE 0305114F)</p> |   |                  |                  |                  | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost | (U) AF RDT&E |  |  |  |  |  |  |  |  |  | (U) National Airspace System program (PE 305137F) (See footnote) | 1,787 | 0 | 201 | 203 | 206 |  |  |  |  | (U) Other APPN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Continuing | TBD | (U) Aircraft procurement, AF |  |  |  |  |  |  |  |  |  |
|  | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost       |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
| (U) AF RDT&E   |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
| (U) National Airspace System program (PE 305137F) (See footnote)   | 1,787   | 0                | 201              | 203              | 206              |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
| (U) Other APPN   | 0   | 0                | 0                | 0                | 0                | 0                | 0                | Continuing       | TBD              |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |
| (U) Aircraft procurement, AF   |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |  |       |   |     |     |     |  |  |  |  |                |   |   |   |   |   |   |   |            |     |                              |  |  |  |  |  |  |  |  |  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |   |          |          |          |          |          |          |            | DATE       | PROJECT |
|--|--|---|----------|----------|----------|----------|----------|----------|------------|------------|---------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE                           |          |          |          |          |          |          |            |            |         |
| 07 - Operational System Development                  |  | 0305114F Air Traffic Control/Approach/Landing |          |          |          |          |          |          |            |            | 673587  |
|  |  | System (ATCALs)                               |          |          |          |          |          |          |            |            |         |
| (U)  | C. Other Program Funding Summary (\$ in Thousands)   |   |          |          |          |          |          |          |            |            |         |
|  |  | FY 1999                                       | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to    | Total Cost |         |
|  |  | Actual  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete   |            |         |
| (U)  | OPAF - BA 3 (PE 305114F)   | 7,890   | 9,025    | 10,624   | 33,903   | 42,157   | 76,033   | 85,132   | Continuing | TBD        |         |
|  | Weapon System Code 833010  |   |          |          |          |          |          |          |            |            |         |
| (U)  | OPAF, BA 3, (PE 305137F)   | 13,904  | 45,394   | 59,240   | 63,367   | 54,275   | 48,179   | 48,417   | Continuing | 6,675      |         |
|  | Weapon System Code 833020  |   |          |          |          |          |          |          |            |            |         |
| (U)  | OPAF, BA 5, (PE 305137F)   | 1,386   | 4,259    | 4,993    | 5,405    | 4,596    | 4,030    | 4,130    | Continuing |            |         |
|  | Weapon System Code   |   |          |          |          |          |          |          |            |            |         |
|  | 86190A (initial Spares)  |   |          |          |          |          |          |          |            |            |         |
| (U)  | MILCON, AF   | 16,514  | 4,000    | 0        | 0        | 0        | 0        | 0        | Continuing | TBD        |         |
|  | (1) The FY00 funding (\$1,756) was transferred from the NAS program element to this PE in the FY00 Defense Appropriations Act. For FY01-FY03, RDT&E, AF funds shown in this line will be consolidated in PE 305114F to provide greater management flexibility. |   |          |          |          |          |          |          |            |            |         |
| (U)  | D. Acquisition Strategy  |   |          |          |          |          |          |          |            |            |         |
|  | Engineering Manufacturing Development, Fixed Price Incentive Fee (FPIF), No Non-Developmental Items (NDI)  |   |          |          |          |          |          |          |            |            |         |
| (U)  | E. Schedule Profile  |   |          |          |          |          |          |          |            |            |         |
|  |  |   |          |          | FY 1999  |          |          | FY 2000  |            | FY 2001    |         |
|  |  |   |          | 1        | 2        | 3        | 4        | 1        | 2          | 3          | 4       |
| (U)  | Acquisition Milestones:  |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Milestone II (MS II) (Jul 95)  |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Revised Acquisition Pgm Baseline   |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Amended MSII Acquisition Decision Memorandum   |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Voice Switch LRIP Decision   |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Radar LRIP Decision  |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Automation LRIP Decision   |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS Radar & Automation MSIII   |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS IOC  |   |          |          |          |          |          |          |            |            |         |
| (U)  | NAS FOC (3QFY10)   |   |          |          |          |          |          |          |            |            |         |

Project 673587

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Exhibit R-2A (PE 0305114F)

## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                     |  |  | DATE  | February 2000 | PROJECT |
|--|--|---------------------|--|--|---|---------------|---------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE |  |  | 0305114F Air Traffic Control/Approach/Landing |               |         |
| 07 - Operational System Development                  |  | System (ATCALS)     |  |  | 673587  |               |         |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |   |   |                          |                         |                    |                        |                |                |                    | DATE          | February 2000 |
|--|---|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|--------------------|---------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE   |                          |                         |                    | PROJECT                |                |                |                    |               |               |
| 07 - Operational System Development  |   | 0305114F Air Traffic Control/Approach/Landing System (ATCALS) |                          |                         |                    | 673587                 |                |                |                    |               |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          |                         |                    |                        |                |                |                    |               |               |
| (U)  | Primary Hardware Development  | FY 1999   | FY 2000                  | FY 2001                 |                    |                        |                |                |                    |               |               |
| (U)  | Primary Hardware Test and Evaluation  | 365   | 3,454                    | 15,759                  |                    |                        |                |                |                    |               |               |
| (U)  | Test and Evaluation Support   | 0   | 1,532                    | 0                       |                    |                        |                |                |                    |               |               |
| (U)  | Engineering/Technical Support   | 41  | 80                       | 87                      |                    |                        |                |                |                    |               |               |
| (U)  | Technology Insertion Studies/integration activities                             | 92  | 265                      | 442                     |                    |                        |                |                |                    |               |               |
| (U)  | NAS Interoperability/Software Analyses  | 0   | 611                      | 903                     |                    |                        |                |                |                    |               |               |
| (U)  | Mobile Approach Control System (MACS) AOA                                       | 0   | 139                      | 0                       |                    |                        |                |                |                    |               |               |
| (U)  | Air Force Terminal Instrument Procedures Development                            | 1,571   | 0                        | 0                       |                    |                        |                |                |                    |               |               |
| (U)  | Program Management Support and Travel   | 507   | 847                      | 540                     |                    |                        |                |                |                    |               |               |
| (U)  | Total   | 42  | 120                      | 110                     |                    |                        |                |                |                    |               |               |
| (U)  |   | 2,618   | 7,048                    | 17,841                  |                    |                        |                |                |                    |               |               |
| NOTE: Until FY2000, National Airspace System costs were captured in PE 305137F (National Airspace System). As of FY2000, those costs are captured in this program element. |   |   |                          |                         |                    |                        |                |                |                    |               |               |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                         |                    |                        |                |                |                    |               |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |                    |                        |                |                |                    |               |               |
|  | Contractor or Government Performing Activity                                    | Contract Method/Type or Funding Vehicle                       | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete | Total Program |               |
|  | Product Development Organizations   |   |                          |                         |                    |                        |                |                |                    |               |               |
|  | GEC Marconi-Hazeltine   | FP1F  | Jun 93                   | 19,400                  | 19,400             | 10,165                 | 365            |                |                    | 10,530        |               |
|  | Lear Astronics  | FFP   | Dec 97                   | 2,900                   | 2,900              | 2,900                  |                |                | 0                  | 2,900         |               |
|  | Various   | Multiple  | Multiple                 | Continuing              | Continuing         | 0                      | 2,054          | 5,854          | Continuing         | TBD           |               |
|  | Support and Management Organizations  |   |                          |                         |                    |                        |                |                |                    |               |               |
|  | Various   | Multiple  | Multiple                 | Continuing              | Continuing         | 4,041                  | 199            | 550            | Continuing         | TBD           |               |

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Exhibit R-3 (PE 0305114F)

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Exhibit R-3 (PE 0305114F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)  |             |   |          |             | DATE    | February 2000 |
|---|-------------|---|----------|-------------|---------|---------------|
| BUDGET ACTIVITY   |             | PE NUMBER AND TITLE                           |          |             | PROJECT |               |
| 07 - Operational System Development   |             | 0305114F Air Traffic Control/Approach/Landing |          |             | 673587  |               |
|   |             | System (ATCALs)                               |          |             |         |               |
| (U) Performing Organizations Continued:   |             |   |          |             |         |               |
| Test and Evaluation Organizations   |             |   |          |             |         |               |
| 46th Test Wing, Eglin AFB   | PO          | Multiple                                      | 2,135    | 2,235       | 1,835   | 644           |
| FL  |             |   |          |             |         | 0             |
|   |             |   |          |             |         | 2,479         |
| NOTE: All figures prior to FY00 for the 46th Test Wing under the 'Test and Evaluation Organizations' category was disbursed in PE 305137 (National Airspace System). Figures are shown here for reference only. |             |   |          |             |         |               |
| (U) Government Furnished Property:  |             |   |          |             |         |               |
| Contract  |             |   |          |             |         |               |
|   | Method/Type | Award or                                      |          |             |         |               |
| Item  | or Funding  | Obligation                                    | Delivery |             |         |               |
| Description   | Vehicle     | Date  | Date     |             |         |               |
| Product Development Property  |             |   |          | Total Prior | Budget  | Budget to     |
| N/A   |             |   |          | to FY 1999  | FY 1999 | Complete      |
| Support and Management Property   |             |   |          |             | FY 2000 |               |
| N/A   |             |   |          |             |         |               |
| Test and Evaluation Property  |             |   |          |             |         |               |
| N/A   |             |   |          |             |         |               |
| Subtotals   |             |   |          | Total Prior | Budget  | Budget to     |
| Subtotal Product Development  |             |   |          | to FY 1999  | FY 1999 | Complete      |
| Subtotal Support and Management   |             |   |          | 13,065      | 2,419   | TBD           |
| Subtotal Test and Evaluation  |             |   |          | 4,041       | 199     | TBD           |
| Total Project   |             |   |          | 1,835       | 644     | 0             |
|   |             |   |          | 18,941      | 7,048   | TBD           |
|   |             |   |          |             |         | 2,479         |
|   |             |   |          |             |         | TBD           |

Project 673587

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Exhibit R-3 (PE 0305114F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |   | 0305119F Medium Launch Vehicles  |                  |                  |                  |                  |                  |                  |                  | 67624A     |               |
| COST (\$ in Thousands)   |   | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 67624A   | Medium Launch Vehicle   | 3,497  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 399,118    |               |
|  | Quantity of RDT&E Articles  | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b><br/>           National Security requirements dictate a continuing, highly reliable means of placing critical Department of Defense (DoD) satellites into required orbits. Assured access to space, directed by the President in the National Security Launch Strategy, will be accomplished through the use of a robust mix of Expendable Launch Vehicles (ELVs). The Medium Launch Vehicle (MLV) program provides sustainment, procurement and launch of DoD's Atlas II and Delta II ELVs at Cape Canaveral AS, FL, and at Vandenberg AFB, CA. MLV launches Defense Satellite Communication System (DSCS) and Global Positioning System (GPS) satellites. The RDT&amp;E budget for MLV primarily consists of engineering support for system performance upgrades to both the vehicles and the launch facilities, new payload integration, sustaining engineering, and post-flight assessment to maintain the high reliability of the launch vehicles.</p> |   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,193   | Delta II range required facilities upgrade   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$545   | Delta II systems integration   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,759   | Sustaining engineering and mission support for MLV launch facilities, infrastructure, and launch operations for launch complexes 3, 17, and 36 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$3,497   | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | No Activity  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2001 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | No Activity  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | <b>B. Budget Activity Justification</b><br>This program is in Budget Activity 7, Operational Systems Development, because the Medium Launch Vehicles program is in full production and fully operational. |  |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 67624A

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Exhibit R-2 (PE 0305119F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                 |          |          |          |                           |          |          |                  | DATE       | February 2000 |
|---|--|---------------------------------|----------|----------|----------|---------------------------|----------|----------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE             |          |          |          | PROJECT                   |          |          |                  |            |               |
| 07 - Operational System Development                 |  | 0305119F Medium Launch Vehicles |          |          |          | 67624A                    |          |          |                  |            |               |
| (U)   | <u>C. Program Change Summary (\$ in Thousands)</u>   |                                 |          |          |          |                           |          |          |                  |            |               |
| (U)   | Previous President's Budget (FY 2000 PBR)  |                                 |          |          |          | FY 1999                   | FY 2000  | FY 2001  | Total Cost       |            |               |
| (U)   | Appropriated Value   |                                 |          |          |          | 7,338                     | 1,179    | 1,963    | 399,118          |            |               |
| (U)   | Adjustments to Appropriated Value  |                                 |          |          |          | 7,375                     | 0        |          |                  |            |               |
|   | a. Congressional/General Reductions  |                                 |          |          |          | -37                       |          |          |                  |            |               |
|   | b. Small Business Innovative Research  |                                 |          |          |          | -64                       |          |          |                  |            |               |
|   | c. Omnibus or Other Above Threshold Reprogram  |                                 |          |          |          | -3,757                    |          |          |                  |            |               |
|   | d. Below Threshold Reprogram   |                                 |          |          |          | -20                       |          |          |                  |            |               |
|   | e. Rescissions   |                                 |          |          |          |                           |          |          |                  |            |               |
|   | f. Other   |                                 |          |          |          |                           |          |          |                  |            |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |                                 |          |          |          |                           |          |          |                  |            |               |
| (U)   | Current Budget Submit/FY 2001 PBR  |                                 |          |          |          | 3,497                     | 0        | -1,963   | 0                | 399,118    |               |
| (U)   | <u>Significant Program Changes:</u>  |                                 |          |          |          |                           |          |          |                  |            |               |
|   | Funding: FY99 program changes reflect reprogramming actions of Delta funds to higher Air Force priorities due to requirement reductions for sustaining engineering. Recolored FY01 through FY03 funds to 3020 to eliminate existing shortfall in FFRDC support.  |                                 |          |          |          |                           |          |          |                  |            |               |
| (U)   | <u>D. Other Program Funding Summary (\$ in Thousands)</u>  |                                 |          |          |          |                           |          |          |                  |            |               |
|   |  | FY 1999                         | FY 2000  | FY 2001  | FY 2002  | FY 2003                   | FY 2004  | FY 2005  | Cost to Complete | Total Cost |               |
|   |  | Actual                          | Estimate | Estimate | Estimate | Estimate                  | Estimate | Estimate |                  |            |               |
| (U)   | Other APPN   |                                 |          |          |          |                           |          |          |                  |            |               |
| (U)   | Missile Procurement, Air Force (PE35119F, BA 5, P-1 29)  | 172,268                         | 64,013   | 55,939   | 47,161   | 46,767                    | 37,199   | 36,947   | 0                | 2,595,734  |               |
| (U)   | <u>E. Acquisition Strategy</u>   |                                 |          |          |          |                           |          |          |                  |            |               |
|   | The MLV program is in final production and consists of two medium launch vehicles: Atlas II and the Delta II. The Air Force Atlas II launch vehicle RDT&E and production programs are complete. The procurement dollars for the Air Force Atlas II program finance the launch services for the two remaining DSCS missions on the Lockheed Martin Atlas launch base operations contract. The Delta II program primarily consists of launching Global Positioning System (GPS) satellites to replenish the current constellation. The final option on the Boeing production contract for the last 5 Delta II boosters was exercised in January 1999, so remaining Delta II procurement funds are for Delta launch operations, sustaining engineering, and program office support. |                                 |          |          |          |                           |          |          |                  |            |               |
| Project 67624A                                      |  | Page 2 of 5 Pages               |          |          |          | Exhibit R-2 (PE 0305119F) |          |          |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)      |                                 | DATE    | February 2000 |         |
|--|---------------------------------|---------|---------------|---------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE             | PROJECT |               |         |
| 07 - Operational System Development                      | 0305119F Medium Launch Vehicles | 67624A  |               |         |
| (U) <u>E. Schedule Profile</u>                           |                                 |         |               |         |
|  |                                 | FY 1999 | FY 2000       | FY 2001 |
|  |                                 | 1 2 3 4 | 1 2 3 4       | 1 2 3 4 |
| (U) Delta/GPS Launches                                   |                                 |         |               |         |
| (U) Delta/STP Launch                                     |                                 |         |               |         |
| (U) Atlas/DSCS Launches                                  |                                 |         |               |         |
| *=complete   |                                 |         |               |         |
| X=planned (may reflect more than one launch per quarter) |                                 |         |               |         |



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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                       |  |   |                          |                         |                                 |                        |                           |                |                |
|--|--|---|--------------------------|-------------------------|---------------------------------|------------------------|---------------------------|----------------|----------------|
| BUDGET ACTIVITY  |  |   |                          |                         | DATE                            |                        | PROJECT                   |                |                |
| 07 - Operational System Development                                      |  |   |                          |                         | 0305119F Medium Launch Vehicles |                        | 67624A                    |                |                |
| A. Project Cost Breakdown (\$ in Thousands)                              |  |   |                          |                         | FY 1999                         | FY 2000                | FY 2001                   |                |                |
| (U)  | Delta II Range Facilities Upgrades         |   |                          |                         | 1,193                           | 0                      | 0                         |                |                |
| (U)  | Delta II Systems Integration               |   |                          |                         | 545                             | 0                      | 0                         |                |                |
| (U)  | Sustaining Engineering and Mission Support |   |                          |                         | 1,759                           | 0                      | 0                         |                |                |
| (U)  | Total                                      |   |                          |                         | 3,497                           | 0                      | 0                         |                |                |
| B. Budget Acquisition History and Planning Information (\$ in Thousands) |  |   |                          |                         |                                 |                        |                           |                |                |
| (U)  | Performing Organizations:                  |   |                          |                         |                                 |                        |                           |                |                |
|  | Contract or Government Performing Activity | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC              | Total Prior to FY 1999 | Budget FY 1999            | Budget FY 2000 | Budget FY 2001 |
|  | Product Development Organizations          |   |                          |                         |                                 |                        |                           |                |                |
|  | Lockheed Martin                            | SS/FFP                                  | Jun 88                   | N/A                     | N/A                             | 70,927                 |                           |                |                |
|  | Boeing                                     | SS/FFP                                  | Sep 87                   | N/A                     | N/A                             | 205,270                |                           |                |                |
|  | Boeing                                     | C/FFP                                   | Apr 93                   | N/A                     | N/A                             | 25,068                 | 1,695                     |                |                |
|  | GSAC                                       | Various                                 | Various                  | N/A                     | N/A                             | 3,321                  |                           |                |                |
|  | Austere Improvements                       | Various                                 | Various                  | N/A                     | N/A                             | 10,484                 |                           |                |                |
|  | Support and Management Organizations       |   |                          |                         |                                 |                        |                           |                |                |
|  | Mission Support                            | SS/FPI                                  | FY94                     | N/A                     | N/A                             | 16,203                 | 1,095                     |                |                |
|  | Various SMC                                | Various                                 | FY94                     | N/A                     | N/A                             | 53,218                 | 707                       |                |                |
|  | Other Ktr Sup                              | SS/FFP                                  | FY94                     | N/A                     | N/A                             | 2,254                  |                           |                |                |
|  | Vandenberg Sup                             | Various                                 | Various                  | N/A                     | N/A                             | 3,270                  |                           |                |                |
|  | Environment/Safety                         | Various                                 | Various                  | N/A                     | N/A                             | 5,606                  |                           |                |                |
|  | Test and Evaluation Organizations          |   |                          |                         |                                 |                        |                           |                |                |
|  | None                                       |   |                          |                         |                                 |                        |                           |                |                |
| Project 67624A   |  |   |                          |                         | Page 4 of 5 Pages               |                        | Exhibit R-3 (PE 0305119F) |                |                |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                                |  |                  |                  |                  |                  |                  |                  |                  | DATE       |  | February 2000 |  |
|---|--------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|--|---------------|--|
| BUDGET ACTIVITY                                     |                                | PE NUMBER AND TITLE                            |                  |                  |                  |                  |                  |                  |                  | PROJECT    |  |               |  |
| 07 - Operational System Development                 |                                | 0305128F Security And Investigative Activities |                  |                  |                  |                  |                  |                  |                  | 671931     |  |               |  |
| COST (\$ in Thousands)                              |                                | FY 1999 Actual                                 | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |  |               |  |
| 671931  | TECH SURVEIL COUNTER MEAS EQPT | 1,348  | 1,449            | 467              | 469              | 473              | 482              | 492              | Continuing       | TBD        |  |               |  |
|   | Quantity of RDT&E Articles     | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |  |               |  |

(U) **A. Mission Description**

AFOSI conducts specialized investigative activities and force protection support for Air Force (AF) commanders worldwide. This assists AF commanders in protecting their people and resources. AFOSI's mission includes investigating criminal matters affecting AF personnel, contract fraud and economic crimes involving AF weapons systems and spare parts, the investigation of environmental crime, counterdrugs, computer intrusion detection and forensic media analysis of computer crimes. This element supports Technical Surveillance Countermeasures (TSCM), Computer Crime Investigations (CCI), and technical support to criminal and counterintelligence investigations and operations conducted by AFOSI. AFOSI's TSCM mission provides security assessments to both AF and DoD facilities and programs. The purpose of CCI research is to improve AF and DoD Information Operations capability by enhancing AFOSI's ability to deter or prevent spies, hackers, or saboteurs from manipulating, damaging, or stealing sensitive war fighting data or systems. Failing that, to investigate, identify, and prosecute those who do. While most research to meet operational requirements is Operational System Development, there is also research in the category of Engineering and Manufacturing Development due to a need for modifications to present technology.

The equipment required to provide technical support to investigations is unique and complex. This equipment must be continually updated to provide state-of-the-art capabilities to detect and neutralize criminal activities targeted against the AF and DoD. In an era of advancing technology, reduced manning, and increasingly high level fraud, environmental crime and computer crime investigations, technical investigative equipment must be continuously updated to enable AFOSI special agents to have the most cost effective and best possible means of thwarting criminal acts. The evolution of a new wave of computer crimes has made AFOSI responsible for the collection, investigative analysis, national level law enforcement coordination, and dissemination of hacker activity and intrusion incidents for the Air Force. AFOSI's computer crime equipment must stay on the leading edge of technology to collect criminal information as well as pursue and apprehend criminals through a global medium. AFOSI must continually update its existing high tech computer surveillance equipment to support ongoing and future investigative operations to identify hackers and hacker groups, as well as potential hostile government activities targeting Air Force communication and control systems.

Critical Infrastructure Protection identifies weaknesses in the Air Force Critical infrastructure, highlights critical countermeasures and acquires and deploys cost-effective solutions. The intent is: to provide an Air Force-wide review of current infrastructure vulnerabilities; prioritize AF protection planning and integrate with existing programs; identify gaps based on AF needs; direct studies to refine AF requirements.

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |  | DATE                      | February 2000 |
|--|--|---------------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  | PROJECT                   |               |
| 07 - Operational System Development  | 0305128F Security And Investigative Activities   | 671931                    |               |
| (U) A. <u>Mission Description Continued</u>  |  |                           |               |
| (U) FY 1999 (\$ in Thousands)  |  |                           |               |
| (U) \$953  | Computer Crimes Investigative (CCI) equipment. RDT&E of CCI software   |                           |               |
| (U) \$200  | Remote crime scene viewing. Worked to develop remote crime scene viewing capability  |                           |               |
| (U) \$50   | Next generation Technical Surveillance Countermeasures (TSCM) receiver. Demonstration and validation of TSCM receiver software |                           |               |
| (U) \$75   | Language translation software. Strived to develop document translation software  |                           |               |
| (U) \$70   | Information Technology (IT). Tested and evaluated IT products  |                           |               |
| (U) \$1,348  | Total  |                           |               |
| (U) FY 2000 (\$ in Thousands)  |  |                           |               |
| (U) \$75   | Telephone/Computer LAN analyzer. Development of system software and hardware enhancements                                      |                           |               |
| (U) \$75   | Language translation software. Continuing development of document translation software   |                           |               |
| (U) \$50   | Next generation Technical Surveillance Countermeasures (TSCM) receiver. Continuing development of TSCM receiver software       |                           |               |
| (U) \$1,249  | Computer Crimes Investigative (CCI) equipment. RTD&E of CCI software   |                           |               |
| (U) \$1,449  | Total  |                           |               |
| (U) FY 2001 (\$ in Thousands)  |  |                           |               |
| (U) \$50   | Telephone/Computer LAN analyzer. Development of system software and hardware enhancements                                      |                           |               |
| (U) \$50   | Next generation Technical Surveillance Countermeasures (TSCM) receiver. Continuing development of TSCM receiver software       |                           |               |
| (U) \$75   | Language translation software. Continuing development of document translation software   |                           |               |
| (U) \$292  | Computer Crimes Investigative (CCI) Equipment. RTD&E of CCI software.  |                           |               |
| (U) \$467  | Total  |                           |               |
| (U) B. <u>Budget Activity Justification</u>  |  |                           |               |
| This program is in Budget Activity 7, Operational System Development, because its products are primarily for use in investigative activity of an operational nature. |  |                           |               |
| (U) C. <u>Program Change Summary (\$ in Thousands)</u>   |  |                           |               |
| (U)  | FY 1999  | FY 2000                   | FY 2001       |
| (U)  | 458  | 466                       | 467           |
| (U)  | 1,458  | 1,466                     | TBD           |
| (U)  | -55  | -9                        |               |
| a. Congressional/General Reductions  |  |                           |               |
| Project 671931   |  | Page 2 of 6 Pages         |               |
|  |  | Exhibit R-2 (PE 0305128F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |  |          |          | DATE                      | February 2000 |
|---|--|--|----------|----------|---------------------------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                            |          |          | PROJECT                   |               |
| 07 - Operational System Development                 |  | 0305128F Security And Investigative Activities |          |          | 671931                    |               |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued  |  |          |          |                           |               |
|   | b. Small Business Innovative Research  |  |          |          |                           | Total Cost    |
|   | c. Omnibus or Other Above Threshold Reprogram  |  |          |          |                           |               |
|   | d. Below Threshold Reprogram   |  |          |          |                           |               |
|   | e. Rescissions   |  |          |          |                           |               |
|   | f. Other   |  |          |          |                           | TBD           |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |  |          |          |                           |               |
| (U)   | Current Budget Submit/FY 2001 PBR  |  |          |          |                           | TBD           |
| (U)   | Significant Program Changes:   |  |          |          |                           |               |
|   | \$1.0M Congressional add in FY 99 and FY 00  |  |          |          |                           |               |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)   |  |          |          |                           |               |
|   |  | FY 1999  | FY 2000  | FY 2001  | FY 2002                   | FY 2003       |
|   |  | Actual   | Estimate | Estimate | Estimate                  | Estimate      |
| (U)   | AF RDT&E   |  |          |          |                           |               |
| (U)   | Other APPN   |  |          |          |                           |               |
| (U)   | Automatic Data Processing  | 82   | 0        | 0        | 191                       | 199           |
|   | Equipment  |  |          |          |                           |               |
| (U)   | Radio Equipment  | 0  | 422      | 422      | 422                       | 422           |
| (U)   | Base Communication   | 1,000  | 0        | 0        | 0                         | 0             |
|   | Infrastructure   |  |          |          |                           | 1,000         |
| (U)   | Base Procured Equipment  | 0  | 0        | 0        | 0                         | 0             |
| (U)   | Technical Surveillance   | 2,030  | 2,976    | 3,049    | 2,876                     | 2,877         |
|   | Countermeasures Equipment  |  |          |          |                           |               |
| (U)   | BA63/Security &  |  |          |          |                           |               |
|   | Investigative  |  |          |          |                           |               |
|   | Activities/PE0305128F  |  |          |          |                           |               |
| (U)   | E. Acquisition Strategy  |  |          |          |                           |               |
|   | All major contracts within this Program Element were awarded via sole source contract due to the sensitivity of technologies involved. |  |          |          |                           |               |
| Project 671931                                      |  | Page 3 of 6 Pages                              |          |          | Exhibit R-2 (PE 0305128F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  | DATE                |         | February 2000                                  |   | PROJECT |   |
|---|--|---------------------|---------|--|---|---------|---|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE |         | 0305128F Security And Investigative Activities |   | 671931  |   |
| (U) <u>F. Schedule Profile</u>                      |  |                     |         |  |   |         |   |
| (U) TSCM Receiver/Software Suite                    |  | 1                   | FY 1999 |  |   |         | 4 |
|   |  |                     | 2       | 3  | 4 | 1       |   |
| (U) Telephone/Computer LAN Analyzer                 |  |                     | FY 2000 |  |   |         | 3 |
|   |  |                     | 2       | 3  | 4 | 1       |   |
| (U) CCI Equipment                                   |  |                     | FY 2001 |  |   |         | X |
|   |  |                     | 2       | 3  | 4 | 1       |   |
| (U) Information Technology                          |  |                     | FY 2000 |  |   |         | X |
|   |  |                     | 2       | 3  | 4 | 1       |   |
| (U) Language Translation Software                   |  |                     | FY 2001 |  |   |         | X |
|   |  |                     | 2       | 3  | 4 | 1       |   |
| (U) Advanced Crime Scene Viewing                    |  |                     | FY 2000 |  |   |         | X |
|   |  |                     | 2       | 3  | 4 | 1       |   |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                           |   |                          |                         |                    |                        | DATE           | FEBRUARY 2000  |                   |
|--|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|-------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE<br>0305128F Security And Investigative Activities |                          |                         |                    |                        |                |                | PROJECT<br>671931 |
| (U) A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                    |                        |                |                |                   |
|  | FY 1999   | FY 2000                  | FY 2001                 |                    |                        |                |                |                   |
| (U) Primary Hardware Development   | 278   | 75                       | 50                      |                    |                        |                |                |                   |
| (U) Software Development   | 1,070   | 1,374                    | 417                     |                    |                        |                |                |                   |
| (U) Total  | 1,348   | 1,449                    | 467                     |                    |                        |                |                |                   |
| (U) B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                    |                        |                |                |                   |
| (U) Performing Organizations:  |   |                          |                         |                    |                        |                |                |                   |
| Contractor or Government Performing Activity                                 | Method/Type or Funding Vehicle  | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001    |
| AF Infrastructure Protection Studies   |   |                          | EAC                     | EAC                | 1,884                  | 0              | 0              | 0                 |
| Product Development Organizations  |   |                          |                         |                    |                        |                |                |                   |
| Matrix Engineering   | SS/FFP  | Feb 98                   | N/A                     | N/A                | 264                    | 50             | 50             | 50                |
| Sensys Technologies  | SS/FFP  | Mar 98                   | N/A                     | N/A                | 715                    | 0              | 0              | 0                 |
| Army Research Lab  | SS/FFP  | Mar 99                   | N/A                     | N/A                | 75                     | 275            | 75             | 75                |
| Sandia Natl Lab  | SS/FFP  | Feb 99                   | N/A                     | N/A                | 0                      | 945            | 1,249          | 0                 |
| Scyld Computing Service  | SS/FFP  | Mar 99                   | N/A                     | N/A                | 341                    | 0              | 0              | 0                 |
| Carrera  | SS/FFP  | Mar 99                   | N/A                     | N/A                | 260                    | 0              | 0              | 0                 |
| Sydex  | SS/FFP  | Apr 99                   | N/A                     | N/A                | 50                     | 0              | 0              | 0                 |
| NSA  | SS/FFP  | Sep 98                   | N/A                     | N/A                | 134                    | 0              | 0              | 0                 |
| US DOT   | SS/FFP  | Mar 99                   | N/A                     | N/A                | 155                    | 0              | 0              | 0                 |
| TBD  | SS/FFP  | Mar 99                   | N/A                     | N/A                | 0                      | 0              | 75             | 342               |
| Support and Management Organizations   |   |                          |                         |                    |                        |                |                |                   |
| None   |   |                          |                         |                    |                        |                |                |                   |
| Test and Evaluation Organizations  |   |                          |                         |                    |                        |                |                |                   |
| None   |   |                          |                         |                    |                        |                |                |                   |





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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |  | 0305137F National Airspace System                                 |                  |                  |                  |                  |                  |                  |                  | 674090     |               |
|   | COST (\$ in Thousands)   | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674090  | National Airspace System (NAS)   | 1,777   | 0                | 200              | 201              | 204              | 0                | 0                | 0                | 107,871    |               |
|   | Quantity of RDT&E Articles   | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| (U)   | <b>A. Mission Description</b>  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
|   | The DOD National Airspace System program will modernize the DoD Air Traffic Control (ATC) system in parallel with the Federal Aviation Administration (FAA) modernization. DoD will acquire, to the maximum extent practical, systems on contract with the FAA to reduce development costs and prevent duplication. The DoD NAS program provides systems and facilities compatible/interoperable with the FAA modernization, prevents DoD flight delays and cancellations, continues DoD's access into Special Use Airspace (SUA), provides transparent services to military and civil aircraft, replaces aging DoD ATC systems, and increases flight safety. The Military Airspace Management System (MAMS) will more effectively schedule and manage SUA. DoD military ATC and fighting/flying readiness will be maintained. |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 1999 (\$ in Thousands)</b>   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$800  | Continued Military Airspace Management System (MAMS) development  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$321  | Completed NAS DoD subsystem analysis for each DoD site            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$656  | Continued radar and automation acquisition and test               |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,777  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 2000 (\$ in Thousands)</b>   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0  | Activities consolidated in PE 35114F (ATCALS)                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 2001 (\$ in Thousands)</b>   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$110  | Identify interface/interoperability improvements for NAS projects |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$55   | Perform risk reduction studies and software analyses              |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$35   | Provide on-site engineering analyses                              |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$200  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>B. Budget Activity Justification</b>  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
|   | This program is in budget activity 7, Operational System Development, because the DoD Air Traffic Control system is operational. NAS is not a new start program and no activities within the NAS projects will require congressional approval for a new start program.   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| Project 674090                                      |  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| Exhibit R-2 (PE 0305137F)                           |  |   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                   |  |  | DATE    | February 2000 |
|---|--|-----------------------------------|--|--|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE               |  |  | PROJECT |               |
| 07 - Operational System Development                 |  | 0305137F National Airspace System |  |  | 674090  |               |
| (U)   | C. Program Change Summary (\$ in Thousands)        |                                   |  |  |         |               |
| (U)   | Previous President's Budget (FY 2000 PBR)          |                                   |  |  |         | Total Cost    |
| (U)   | Appropriated Value                                 |                                   |  |  |         | 109,635       |
| (U)   | Adjustments to Appropriated Value                  |                                   |  |  |         |               |
|   | a. Congressional/General Reductions                |                                   |  |  |         |               |
|   | b. Small Business Innovative Research              |                                   |  |  |         |               |
|   | c. Omnibus or Other Above Threshold Reprogram      |                                   |  |  |         |               |
|   | d. Below Threshold Reprogram                       |                                   |  |  |         |               |
|   | e. Rescissions                                     |                                   |  |  |         |               |
|   | f. Other   |                                   |  |  |         |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR      |                                   |  |  |         |               |
| (U)   | Current Budget Submit/FY 2001 PBR                  |                                   |  |  |         | 107,871       |
| (U)   | Significant Program Changes:                       |                                   |  |  |         |               |
|   | None   |                                   |  |  |         |               |
| (U)   | D. Other Program Funding Summary (\$ in Thousands) |                                   |  |  |         |               |
|   |  |                                   |  |  |         | Total Cost    |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                     |   | DATE                              | February 2000 | PROJECT |        |   |   |
|---|---|---------------------|---|-----------------------------------|---------------|---------|--------|---|---|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE |   | 0305137F National Airspace System |               |         | 674090 |   |   |
| 07 - Operational System Development                 |   |                     |   |                                   |               |         |        |   |   |
| (U)   | F. Schedule Profile                           |                     |   |                                   |               |         |        |   |   |
|   |   | 1                   | 2 | 3                                 | 4             | 1       | 2      | 3 | 4 |
| (U)   | Acquisition Milestones                        |                     |   |                                   |               |         |        |   |   |
| (U)   | Milestone II (MS II) (Jul 95)                 |                     |   |                                   |               |         |        |   |   |
| (U)   | Revised Acquisition Program Baseline          |                     |   | *                                 |               |         |        |   |   |
| (U)   | Amended MS II Acquisition Decision Memorandum |                     |   | *                                 |               |         |        |   |   |
| (U)   | Voice Switch LRIP Decision                    |                     |   |                                   |               |         |        |   |   |
| (U)   | Voice Switch FRP Decision                     |                     |   |                                   |               |         |        |   |   |
| (U)   | Radar LRIP Decision                           |                     |   |                                   |               |         |        |   |   |
| (U)   | Automation LRIP Decision                      |                     |   |                                   |               |         |        |   |   |
| (U)   | Radar & Automation Milestone III              |                     |   |                                   |               |         |        |   |   |
| (U)   | Contract Milestones                           |                     |   |                                   |               |         |        |   |   |
| (U)   | Radar   |                     |   |                                   |               |         |        |   |   |
| (U)   | Contract Award (Aug 96)                       |                     |   |                                   |               |         |        |   |   |
| (U)   | Complete radar OT&E                           |                     |   |                                   |               |         |        |   |   |
| (U)   | Automation                                    |                     |   |                                   |               |         |        |   |   |
| (U)   | Contract Award (Sep 96)                       |                     |   |                                   |               |         |        |   |   |
| (U)   | Complete automation OT&E                      |                     |   |                                   |               |         |        |   |   |
| (U)   | Voice Switch                                  |                     |   |                                   |               |         |        |   |   |
| (U)   | Contract Award (Jul 95)                       |                     |   |                                   |               |         |        |   |   |
| (U)   | Complete voice switch OT&E                    |                     |   | *                                 |               |         |        |   |   |
| (U)   | NAS IOC                                       |                     |   |                                   |               |         |        |   |   |
| (U)   | NAS FOC Apr 2010                              |                     |   |                                   |               |         |        |   |   |
| (U)   | MAMS  |                     |   |                                   |               |         |        |   |   |
| (U)   | Contract Award (Nov 95)                       |                     |   |                                   |               |         |        |   |   |
| (U)   | MAMS First Delivery/IOC                       |                     |   | *                                 |               |         |        |   |   |
| (U)   | MAMS Control Facility Activation              |                     |   |                                   |               |         |        |   |   |
|   | * Denotes completed event                     |                     |   |                                   |               |         |        |   |   |
|   | X Denotes planned event                       |                     |   |                                   |               |         |        |   |   |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |   |   |                          |                     |                |                        |                |                |                | DATE               | February 2000 |
|--|---|---|--------------------------|---------------------|----------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE                     |                          |                     |                | PROJECT                |                |                |                |                    |               |
| 07 - Operational System Development  |   | 0305137F National Aerospace System      |                          |                     |                | 674090                 |                |                |                |                    |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Software Development  | FY 1999                                 | FY 2000                  | FY 2001             |                |                        |                |                |                |                    |               |
| (U)  | Site Surveys  | 800                                     |                          | 0                   |                |                        |                |                |                |                    |               |
| (U)  | Facility/Transition Planning  | 100                                     |                          | 0                   |                |                        |                |                |                |                    |               |
| (U)  | Integration/Interface Planning  | 0                                       |                          | 0                   |                |                        |                |                |                |                    |               |
| (U)  | System Engineering  | 274                                     |                          | 0                   |                |                        |                |                |                |                    |               |
| (U)  | Interoperability/software analyses  | 55                                      |                          | 35                  |                |                        |                |                |                |                    |               |
| (U)  | Primary Hardware Test and Evaluation  | 0                                       |                          | 135                 |                |                        |                |                |                |                    |               |
| (U)  | Program Management Support and Travel   | 508                                     |                          | 0                   |                |                        |                |                |                |                    |               |
| (U)  | Total   | 40                                      |                          | 30                  |                |                        |                |                |                |                    |               |
| (U)  |   | 1,777                                   |                          | 200                 |                |                        |                |                |                |                    |               |
| Note: FY00 funds have been transferred to PE 35114F (ATCAL5) IAW HAC guidance on elimination of small dollar amount line items. FY01 requires same action. |   |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                     |                |                        |                |                |                |                    |               |
|  | Contractor or Government  | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity | Project Office | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  | <b>Product Development Organizations</b>  |   |                          |                     |                |                        |                |                |                |                    |               |
|  | Computer Based Systems  | CPAF                                    | Jun 94                   | 3,500               | 3,500          | 3,500                  |                |                |                |                    | 3,500         |
|  | Hughes Aircraft/Raytheon  | CPFF                                    | Nov 95                   | 13,534              | 13,534         | 12,705                 | 829            |                |                |                    | 13,534        |
|  | Raytheon (Radar)  | IDIQ - FFP                              | Aug 96                   | 18,275              | 18,275         | 17,875                 | 429            |                |                |                    | 18,304        |
|  | Raytheon (Automation)   | IDIQ-FFP                                | Sep 96                   | 5,862               | 3,005          | 3,005                  |                |                |                |                    | 3,005         |
|  | Liton-Denro   | IDIQ-FFP                                | Jul 95                   | 2,570               | 2,570          | 2,570                  |                |                |                |                    | 2,570         |
|  | Miscellaneous   | FFP                                     | Various                  | 3,706               | 3,706          | 2,679                  |                |                |                |                    | 2,679         |
|  | <b>Support and Management Organizations</b>                                     |   |                          |                     |                |                        |                |                |                |                    |               |
|  | MITRE   | CPAF                                    | Oct 94                   | 21,910              | 21,805         | 21,805                 |                |                |                |                    | 21,805        |
|  | Martin Marietta   | FFP                                     | Sep 94                   | 8,700               | 8,700          | 8,700                  |                |                |                |                    | 8,700         |
|  | Miscellaneous   | Multiple                                | Multiple                 | 32,624              | 30,815         | 30,815                 | 40             |                | 200            | 405                | 31,460        |
| Project 674090   |   |   |                          |                     |                |                        |                |                |                |                    |               |
| Page 4 of 5 Pages  |   |   |                          |                     |                |                        |                |                |                |                    |               |
| Exhibit R-3 (PE 0305137F)  |   |   |                          |                     |                |                        |                |                |                |                    |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                                   |       |       |       |         |       |  |  | DATE | February 2000 |
|--|-------------|-----------------------------------|-------|-------|-------|---------|-------|--|--|------|---------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE               |       |       |       | PROJECT |       |  |  |      |               |
| 07 - Operational System Development                |             | 0305137F National Airspace System |       |       |       | 674090  |       |  |  |      |               |
| (U) Performing Organizations Continued:            |             |                                   |       |       |       |         |       |  |  |      |               |
| Test and Evaluation Organizations                  |             |                                   |       |       |       |         |       |  |  |      |               |
| 46th Test Wing,                                    | PO          | Multiple                          | 2,135 | 2,235 | 1,835 | 479     | 2,314 |  |  |      |               |
| Eglin AFB, FL                                      |             |                                   |       |       |       |         |       |  |  |      |               |
| (U) Government Furnished Property:                 |             |                                   |       |       |       |         |       |  |  |      |               |
|  | Contract    |                                   |       |       |       |         |       |  |  |      |               |
|  | Method/Type | Award or                          |       |       |       |         |       |  |  |      |               |
|  | or Funding  | Obligation                        |       |       |       |         |       |  |  |      |               |
|  | Vehicle     | Date                              |       |       |       |         |       |  |  |      |               |
| Item   |             | Delivery                          |       |       |       |         |       |  |  |      |               |
| Description  |             | Date                              |       |       |       |         |       |  |  |      |               |
| Product Development Property                       |             |                                   |       |       |       |         |       |  |  |      |               |
| None   |             |                                   |       |       |       |         |       |  |  |      |               |
| Support and Management Property                    |             |                                   |       |       |       |         |       |  |  |      |               |
| None   |             |                                   |       |       |       |         |       |  |  |      |               |
| Test and Evaluation Property                       |             |                                   |       |       |       |         |       |  |  |      |               |
| None   |             |                                   |       |       |       |         |       |  |  |      |               |
| Subtotals  |             |                                   |       |       |       |         |       |  |  |      |               |
| Subtotal Product Development                       |             |                                   |       |       |       |         |       |  |  |      |               |
| Subtotal Support and Management                    |             |                                   |       |       |       |         |       |  |  |      |               |
| Subtotal Test and Evaluation                       |             |                                   |       |       |       |         |       |  |  |      |               |
| Total Project                                      |             |                                   |       |       |       |         |       |  |  |      |               |

Project 674090

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Exhibit R-3 (PE 0305137F)

Project 674090

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Exhibit R-3 (PE 0305137F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
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| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE              |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |  | 0305138F Inert Upper Stage (IUS) |                  |                  |                  |                  |                  |                  |                  | 674053     |               |
|   | COST (\$ in Thousands)   | FY 1999 Actual                   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674053  | Upper Stage Development (IUS)  | 552                              | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 17,422     |               |
|   | Quantity of RDT&E Articles   | 0                                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| (U)   | <b>A. Mission Description</b><br>The Upper Stages Program provides consolidated acquisition of the Inertial Upper Stage (IUS) to support the launch of Defense Support Program (DSP) satellites. IUS is an upper stage on the Titan IV (or Shuttle) which delivers the DSP satellite to the required orbit. The RDT&E program continuously evaluates and improves upper stage reliability, cost effectiveness, and responsiveness. It supports redesign of aging equipment and spares which are no longer manufactured or available, investigates flight anomalies, and performs small studies to assist in defining future upper stages. Funding is combined with the Titan Space Launch Vehicles Program (35144F) beginning in FY00. |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 1999 (\$ in Thousands)</b><br>Funds being reprogrammed for higher priority Air Force items   |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$552  |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$552  | Total                            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 2000 (\$ in Thousands)</b><br>No Activity  |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0  |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0  | Total                            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 2001 (\$ in Thousands)</b><br>No Activity  |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0  |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0  | Total                            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>B. Budget Activity Justification</b><br>This program is categorized in Budget Activity 7, Operational Systems Development, because the Inertial Upper Stage Program is fully operational.   |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |



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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                  |          |          | DATE                      | February 2000 |          |          |          |
|---|--|----------------------------------|----------|----------|---------------------------|---------------|----------|----------|----------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE              |          |          | PROJECT                   |               |          |          |          |
| 07 - Operational System Development                 |  | 0305138F Inert Upper Stage (IUS) |          |          | 674053                    |               |          |          |          |
| (U)   | C. Program Change Summary (\$ in Thousands)  |                                  |          |          |                           | Total Cost    |          |          |          |
| (U)   | Previous President's Budget (FY 2000 PBR)  | FY 1999                          | FY 2000  | FY 2001  |                           |               |          |          |          |
| (U)   | Appropriated Value   | 558                              | 0        | 0        |                           |               |          |          |          |
| (U)   | Adjustments to Appropriated Value  | 558                              | 0        |          |                           |               |          |          |          |
| (U)   | a. Congressional/General Reductions  | -3                               |          |          |                           |               |          |          |          |
|   | b. Small Business Innovative Research  |                                  |          |          |                           |               |          |          |          |
|   | c. Omnibus or Other Above Threshold Reprogram  |                                  |          |          |                           |               |          |          |          |
|   | d. Below Threshold Reprogram   |                                  |          |          |                           |               |          |          |          |
|   | e. Rescissions   | -3                               |          |          |                           |               |          |          |          |
|   | f. Other   |                                  |          |          |                           |               |          |          |          |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |                                  |          |          |                           |               |          |          |          |
| (U)   | Current Budget Submit/FY 2001 PBR  | 552                              | 0        | 0        |                           | 17,422        |          |          |          |
| (U)   | Significant Program Changes:   |                                  |          |          |                           |               |          |          |          |
|   | Beginning in FY00, funding is transferred to the Titan Space Launch Vehicles Program (35144F). |                                  |          |          |                           |               |          |          |          |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)   |                                  |          |          |                           | Total Cost    |          |          |          |
|   |  | FY 1999                          | FY 2000  | FY 2001  | FY 2002                   | FY 2003       | FY 2004  | FY 2005  | Cost to  |
|   |  | Actual                           | Estimate | Estimate | Estimate                  | Estimate      | Estimate | Estimate | Complete |
| (U)   | AF RDT&E   |                                  |          |          |                           |               |          |          |          |
| (U)   | Other APPN   |                                  |          |          |                           |               |          |          |          |
| (U)   | Missile Procurement, Budget  | 42,962                           | 0        | 0        | 0                         | 0             | 0        | 0        |          |
|   | Activity 5, P-25, PE 0305138   |                                  |          |          |                           |               |          |          |          |
| (U)   | Related RDT&E: PE  |                                  | 100      | 63       |                           |               |          |          |          |
|   | 0305144F, Titan Space  |                                  |          |          |                           |               |          |          |          |
|   | Launch Vehicles, IUS portion,  |                                  |          |          |                           |               |          |          |          |
|   | beginning FY00   |                                  |          |          |                           |               |          |          |          |
| (U)   | E. Acquisition Strategy  |                                  |          |          |                           |               |          |          |          |
|   | Components are currently in storage awaiting integration for launch.                           |                                  |          |          |                           |               |          |          |          |
| Project 674053                                      |  | Page 2 of 5 Pages                |          |          | Exhibit R-2 (PE 0305138F) |               |          |          |          |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |                        |                        |                |                |                    | DATE               | February 2000 |
|--|---|---|--------------------------|-------------------------|------------------------|------------------------|----------------|----------------|--------------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                     |                          |                         |                        |                        |                |                |                    | PROJECT            |               |
| 07 - Operational System Development                |   | 0305138F Inert Upper Stage (IUS)        |                          |                         |                        |                        |                |                |                    | 674053             |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                                  |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | Funds being reprogrammed for higher priority Air Force items                        |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | Total   |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>     |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Contractor or Government Performing Activity  | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001     | Budget to Complete | Total Program |
|  | <b>Product Development Organizations</b>  |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Boeing  | SS/FP/AF                                | Jul 85                   | 906,671                 | 942,335                | 6,148                  | 0              | 0              | 0                  | 0                  | 6,148         |
|  | Boeing  | SS/FP/AF                                | Mar 91                   | 151,189                 | 158,055                | 1,991                  | 0              | 0              | 0                  | 0                  | 1,991         |
|  | Boeing  | SS/CPAF/LOE                             | Sep 90                   | 0                       | 4,064                  | 4,064                  | 0              | 0              | 0                  | 0                  | 4,064         |
|  | Boeing  | SS/CPAF                                 | Jun 97                   | 0                       | 10                     | 10                     | 552            | 0              | 0                  | 0                  | 562           |
|  | United Tech Corp/Pratt & Whitney  | SS/CPFF                                 | Mar 95                   | N/A                     | 855                    | 855                    | 0              | 0              | 0                  | 0                  | 855           |
|  | Note: EAC amounts include funds used for IUS under previous Program Elements        |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | FY99 funds budgeted to Boeing were reprogrammed for higher priority Air Force items |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | <b>Support and Management Organizations</b>   |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Space and Missile Systems Center, LAAPB   | N/A                                     | N/A                      | N/A                     | 3,802                  | 3,802                  | 0              | 0              | 0                  | 0                  | 3,802         |
|  | <b>Test and Evaluation Organizations</b>  |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | None  |   |                          |                         |                        |                        |                |                |                    |                    |               |
| (U)  | <b>Government Furnished Property:</b>   |   |                          |                         |                        |                        |                |                |                    |                    |               |
|  | Contract  | Method/Type or Funding Vehicle          | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program      |               |
|  | Item Description  |   |                          |                         |                        |                        |                |                |                    |                    |               |
| Project 674053                                     |   |   |                          |                         |                        |                        |                |                |                    |                    |               |
| Page 4 of 5 Pages                                  |   |   |                          |                         |                        |                        |                |                |                    |                    |               |
| Exhibit R-3 (PE 0305138F)                          |   |   |                          |                         |                        |                        |                |                |                    |                    |               |

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                                  |          |  |                        |                |                |                |                    | DATE          | February 2000 |
|--|-------------|----------------------------------|----------|--|------------------------|----------------|----------------|----------------|--------------------|---------------|---------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE              |          |  |                        | PROJECT        |                |                |                    |               |               |
| 07 - Operational System Development                |             | 0305138F Inert Upper Stage (IUS) |          |  |                        | 674053         |                |                |                    |               |               |
| (U) Government Furnished Property Continued:       |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Contract   |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Item   | Method/Type | Award or                         | Delivery |  |                        |                |                |                |                    |               |               |
|  | or Funding  | Obligation                       | Date     |  |                        |                |                |                |                    |               |               |
| Description  | Vehicle     |                                  |          |  |                        |                |                |                |                    |               |               |
| Product Development Property                       |             |                                  |          |  |                        |                |                |                |                    |               |               |
| None   |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Support and Management Property                    |             |                                  |          |  |                        |                |                |                |                    |               |               |
| None   |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Test and Evaluation Property                       |             |                                  |          |  |                        |                |                |                |                    |               |               |
| None   |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Subtotals  |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Subtotal Product Development                       |             |                                  |          |  | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |               |
|  |             |                                  |          |  | 13,068                 | 552            | 0              | 0              | 0                  | 13,620        |               |
| Subtotal Support and Management                    |             |                                  |          |  | 3,802                  | 0              | 0              | 0              | 0                  | 3,802         |               |
| Subtotal Test and Evaluation                       |             |                                  |          |  |                        |                |                |                |                    |               |               |
| Total Project                                      |             |                                  |          |  | 16,870                 | 552            | 0              | 0              | 0                  | 17,422        |               |

Project 674053

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Exhibit R-3 (PE 0305138F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                            |                                      |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|----------------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                            | PE NUMBER AND TITLE                  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                            | 0305144F Titan Space Launch Vehicles |                  |                  |                  |                  |                  |                  |                  | 674135     |               |
|  |                            | FY 1999 Actual                       | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674135   | Titan II/IV                | 69,823                               | 44,777           | 25,815           | 27,065           | 0                | 0                | 0                | 0                | 3,075,067  |               |
|  | Quantity of RDT&E Articles | 0                                    | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p><b>(U) A. Mission Description</b></p> <p>National security requirements dictate a continuing, highly reliable means of placing critical DoD satellites into required orbits. The Titan IV program provides the capability to launch the largest of these satellites into near-earth or geosynchronous orbits from either the east or west coast launch facilities. Titan IV is used to launch Air Force, National Reconnaissance Office, and NASA payloads. This program provides several different configurations of the Titan IV [No Upper Stage (NUS), Inertial Upper Stage (IUS), and Centaur]. In addition, the Titan IV program has developed a new vehicle configuration, the Titan IVB, with solid rocket motor upgrade (SRMU), new avionics and ground support equipment to meet reliability and increased performance requirements. This program provides continuing integration support to the payload community as well as continuing engineering support to maintain system characterization and reliability.</p> <p>Since FY94, this program element also included funding for sustaining engineering, payload integration, and government costs for the Titan II space launch vehicle. In FY96, program office support was moved to procurement funding. Major RDT&amp;E activities are static test firing of the qualified Titan IV SRMU in 3QFY00, and non-recurring integration for Milstar satellites. Remaining activities are maintaining sustaining engineering and anomaly resolution capability through the end of the program.</p> <p>Beginning in FY00, the Inertial Upper Stages Program (PE 35138F) is combined into the Titan program and provides consolidated acquisition of the IUS to support the launch of Defense Support Program (DSP) satellites. IUS is an upper stage on the Titan IV (can be modified for Shuttle) and delivers the DSP satellite to the required orbit. The RDT&amp;E program continuously evaluates and improves upper stage reliability, cost effectiveness, and responsiveness; supports redesign of aging equipment and spares which are no longer manufactured or available; investigates flight anomalies; and conducts small studies to assist in defining future upper stages.</p> |                            |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$43,006                   |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$19,727                   |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,580                    |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$4,510                    |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$69,823                   |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
|  | Total                      |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 674135

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Exhibit R-2 (PE 0305144F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   |         | DATE                      | February 2000 |
|--|---|---------|---------------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE   | PROJECT |                           |               |
| 07 - Operational System Development  | 0305144F Titan Space Launch Vehicles  | 674135  |                           |               |
| (U) A. Mission Description Continued   |   |         |                           |               |
| (U) FY 2000 (\$ in Thousands)  |   |         |                           |               |
| (U) \$16,293   | Completed Solid Rocket Motor Upgrade (SRMU) requalification   |         |                           |               |
| (U) \$24,570   | Continue integration for Milstar  |         |                           |               |
| (U) \$1,698  | Titan Hardware Redesign and Obsolescence  |         |                           |               |
| (U) \$2,116  | Air Force Research Lab (Phillips) support to SRMU Requalification Project                           |         |                           |               |
| (U) \$100  | Inertial Upper Stage Study and design corrective actions for potential anomalies and obsolete items |         |                           |               |
| (U) \$44,777   | Total   |         |                           |               |
| (U) FY 2001 (\$ in Thousands)  |   |         |                           |               |
| (U) \$25,752   | Continue integration for Milstar  |         |                           |               |
| (U) \$63   | Inertial Upper Stage Study and design corrective actions for potential anomalies and obsolete items |         |                           |               |
| (U) \$25,815   | Total   |         |                           |               |
| (U) B. Budget Activity Justification   |   |         |                           |               |
| This PE is in Budget Activity 7, Operational Systems Development, because Titan II, Titan IV and the Inertial Upper Stage are in production and are operational vehicles. Major Titan IV efforts remaining are SRMU requalification and MILSTAR integration. |   |         |                           |               |
| (U) C. Program Change Summary (\$ in Thousands)  |   |         |                           |               |
| (U) Previous President's Budget (FY 2000 PBR)  |   |         | FY 1999                   | FY 2000       |
| (U) Appropriated Value   |   |         | 77,176                    | 45,379        |
| (U) Adjustments to Appropriated Value  |   |         | 77,443                    | 45,379        |
| a. Congressional/General Reductions  |   |         | -267                      | -3            |
| b. Small Business Innovative Research  |   |         | -2,465                    |               |
| c. Omnibus or Other Above Threshold Reprogram  |   |         | -4,497                    | -246          |
| d. Below Threshold Reprogram   |   |         | -391                      | -353          |
| e. Rescissions   |   |         |                           |               |
| f. Other   |   |         |                           |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |   |         |                           | -247          |
| (U) Current Budget Submit/FY 2001 PBR  |   |         | 69,823                    | 44,777        |
|  |   |         |                           | 25,815        |
|  |   |         |                           | 3,075,067     |
| Project 674135   |   |         | Exhibit R-2 (PE 0305144F) |               |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                      |          |          |          |          |                           |          |            |
|---|--|--------------------------------------|----------|----------|----------|----------|---------------------------|----------|------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                  |          |          |          |          | DATE                      | PROJECT  |            |
| 07 - Operational System Development                 |  | 0305144F Titan Space Launch Vehicles |          |          |          |          | February 2000             | 674135   |            |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued  |                                      |          |          |          |          |                           |          |            |
| (U)   | Significant Program Changes:<br>FY99 funding was reprogrammed to higher Air Force priorities. DSP-22 delayed from Jul 02 to Oct 02.  |                                      |          |          |          |          |                           |          |            |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)   |                                      |          |          |          |          |                           |          |            |
|   |  | FY 1999                              | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004                   | FY 2005  | Total Cost |
|   |  | Actual                               | Estimate | Estimate | Estimate | Estimate | Estimate                  | Estimate | Complete   |
| (U)   | Other APPN   | 0                                    | 0        | 0        | 0        | 0        | 0                         | 0        | 0          |
| (U)   | Missile Procurement, Budget Activity 5, Other Support (P-1 27)   | 535,612                              | 429,260  | 469,720  | 370,450  | 51,433   | 28,126                    | 35,864   | 6,853,275  |
| (U)   | E. Acquisition Strategy<br>The program has implemented a revised acquisition strategy for the 39-vehicle program. During FY1996, Titan IV transitioned from the old '85-C-0019' development/production and payload integration contract to new contracts designed to improve cost accountability, correct contract discrepancies, and establish an overall programmatic view for the effort to complete the program. The new contracts combine Titan II and Titan IV production, storage, pad maintenance and deactivation, launch operations, anomaly resolution, development and hardware requalification, payload integration, and program studies to provide the greatest potential for cost savings by maximizing use of resources and eliminating duplicative processes. |                                      |          |          |          |          |                           |          |            |
| (U)   | F. Schedule Profile  |                                      |          |          |          |          |                           |          |            |
|   |  | FY 1999                              |          |          | FY 2000  |          | FY 2001                   |          |            |
|   |  | 1                                    | 2        | 3        | 4        | 1        | 2                         | 3        | 4          |
| (U)   | Assess Titan IVA-20 mishap   | *                                    |          |          |          |          |                           |          |            |
| (U)   | Complete Titan IVA-20 Return to Flight Activities  |                                      |          | *        |          |          |                           |          |            |
| (U)   | Begin assessment of Titan IV B-27 and B-32 mishaps   |                                      |          | *        |          |          |                           |          |            |
| (U)   | Complete Titan IV B-27 and B-32 Return to Flight Activities  |                                      |          |          |          | *        |                           |          |            |
| (U)   | Test firing of SRMU for requalification  |                                      |          |          |          |          | X                         |          |            |
| (U)   | Milstar launches (Milstar 6 in May 02)   |                                      |          | *        |          |          |                           | X        | X          |
| (U)   | Last Titan Launch (DSP-22 in Oct 02)   |                                      |          |          |          |          |                           |          |            |
|   | *completed event   |                                      |          |          |          |          |                           |          |            |
|   | X planned event  |                                      |          |          |          |          |                           |          |            |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                         | DATE               | February 2000          |
|--|---|---|-------------------------|--------------------|------------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                         |                         | PROJECT            |                        |
| <b>07 - Operational System Development</b>         |   | <b>0305144F Titan Space Launch Vehicles</b> |                         | <b>674135</b>      |                        |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                         |                    |                        |
|  |   | FY 1999                                     | FY 2000                 | FY 2001            |                        |
| (U)  | Titan IV Contract Costs R&D (96-C-0035)   | 43,006                                      | 16,293                  | 0                  |                        |
| (U)  | Contract Costs Unified Payload Integration (98-C-0005)                          | 19,727                                      | 24,570                  | 25,752             |                        |
| (U)  | Titan Hardware Redesign & Obsolescence  | 2,580                                       | 1,698                   | 0                  |                        |
| (U)  | Inertial Upper Stage Study & Design Changes                                     | 0   | 100                     | 63                 |                        |
| (U)  | Facility Support  | 4,510                                       | 2,116                   | 0                  |                        |
| (U)  | Total   | 69,823                                      | 44,777                  | 25,815             |                        |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                         |                    |                        |
| (U)  | <b>Performing Organizations:</b>  |   |                         |                    |                        |
|  | Contract or Government Performing Activity                                      | Contract Method/Type or Funding Vehicle     | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 |
|  |   |   |                         |                    |                        |
|  | <b>Product Development Organizations</b>  |   |                         |                    |                        |
|  | LMC 85-C-0019   | SS/FPIF                                     | 11,203,100              | 11,203,100         | 2,042,016              |
|  | LMC 85-C-0085*  | SS/FPIF                                     | 678,715                 | 678,715            | 72,504                 |
|  | LMC 92-C-0028*  | SS/CPAF                                     | 515,251                 | 515,251            | 93,428                 |
|  | LMC 96-C-0035   | SS/CPAF                                     | 259,690                 | 257,613            | 195,070                |
|  | LMC 98-C-0005   | SS/CPAF                                     | 294,617                 | 293,027            | 18,756                 |
|  | Boeing  | SS/CPAF                                     | N/A                     | N/A                | 0                      |
|  | Facilities  | n/a   | N/A                     | N/A                | 0                      |
|  | Note: EAC are total contract values while funding values are AF funds only      |   |                         |                    |                        |
|  | * Contract closed   |   |                         |                    |                        |
|  | <b>Support and Management Organizations</b>                                     |   |                         |                    |                        |
|  | Tecolote, SRS, TRW,   |   | N/A                     | N/A                | 101,557                |
|  | Antioch   |   |                         |                    |                        |
|  | Other Research & Dev.   | Development                                 | N/A                     | N/A                | 33,068                 |
|  | Aerospace   |   | N/A                     | N/A                | 188,367                |
|  | Other Prgrm Support   |   | N/A                     | N/A                | 162,821                |
|  | Project 674135  |   |                         |                    |                        |
|  | Page 4 of 5 Pages   |   |                         |                    |                        |
|  | Exhibit R-3 (PE 0305144F)   |   |                         |                    |                        |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                              |      | DATE                   | February 2000  | PROJECT        |
|--|-------------|------------------------------|------|------------------------|----------------|----------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE          |      |                        | 674135         |                |
| 07 - Operational System Development                |             |                              |      |                        |                |                |
| (U) Performing Organizations Continued:            |             |                              |      |                        |                |                |
| Test and Evaluation Organizations                  |             |                              |      |                        |                |                |
| None   |             |                              |      |                        |                |                |
| (U) Government Furnished Property:                 |             |                              |      |                        |                |                |
| Contract   |             |                              |      |                        |                |                |
| Method/Type  |             |                              |      |                        |                |                |
| Award or   |             |                              |      |                        |                |                |
| Obligation   |             |                              |      |                        |                |                |
| Date   |             |                              |      |                        |                |                |
| Delivery   |             |                              |      |                        |                |                |
| Date   |             |                              |      |                        |                |                |
| Item   | Description | Product Development Property | None | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 |
| Support and Management Property                    |             |                              |      |                        |                |                |
| None   |             |                              |      |                        |                |                |
| Test and Evaluation Property                       |             |                              |      |                        |                |                |
| None   |             |                              |      |                        |                |                |
| Subtotals  |             |                              |      |                        |                |                |
| Subtotal Product Development                       |             |                              |      | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 |
| Subtotal Support and Management                    |             |                              |      | 2,421,774              | 69,823         | 44,777         |
| Subtotal Test and Evaluation                       |             |                              |      | 485,813                |                |                |
| Total Project                                      |             |                              |      | 2,907,587              | 69,823         | 44,777         |
|  |             |                              |      |                        | 25,815         | 27,065         |
|  |             |                              |      |                        |                | 0              |
|  |             |                              |      |                        |                | 2,589,254      |
|  |             |                              |      |                        |                | 485,813        |
|  |             |                              |      |                        |                | 3,075,067      |

Project 674135

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Exhibit R-3 (PE 0305144F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                            |   |                  |                  |                  |                  |                  |                  |                  | DATE                      | February 2000 |
|---|----------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|---------------|
| BUDGET ACTIVITY   |                            | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT                   |               |
| 07 - Operational System Development   |                            | 0305158F Tactical Terminals   |                  |                  |                  |                  |                  |                  |                  | 674395                    |               |
|   | COST (\$ in Thousands)     | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                |               |
| 674395  | Radio                      | 161   | 0                | 238              | 242              | 248              | 253              | 257              | Continuing       | TBD                       |               |
|   | Quantity of RDT&E Articles | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                         |               |
| <p>(U) <b>A. Mission Description</b></p> <p>Tactical Terminals process near-real-time threat information utilized by combat units/aircrews for mission planning and execution. This program was established as part of the Air Force Tactical Exploitation of National Capabilities (TENCAP) normalization effort. Recently, the Constant Source Operator Terminal (CSOT) functionality was transformed into the Combat Intelligence System (CIS). Tactical Terminals (TT) enable the war fighter to access critical data provided by national and tactical intelligence sources. The Tactical Terminals program involves three radio programs: 1). Tactical Receive Equipment (TRE), 2). Multi-mission Advanced Tactical Terminal (MATT), and 3). Joint Tactical Terminals (JTT). Currently over 150 TRE and MATT ground systems are deployed. Air Force is jointly developing and procuring MATT as an airborne qualified radio. The Air Force has deployed 80 MATT terminals. There are ongoing efforts to integrate the Common Integrated Broadcast Service Modules (CIBS-M) into the MATT, transforming the MATT into the JTT family of terminals. The MATT and JTT have been designated Integrated Broadcast Service (IBS) terminals.</p> |                            |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | FY 1999 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$89                       | Continue to plan and support integration on DoD aircraft and weapon systems                                   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$72                       | Continue to support migration of MATT into next generation tactical terminal (JTT)                            |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$161                      | Total   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | FY 2000 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$0                        | No Activity   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$0                        | Total   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | FY 2001 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$145                      | In-house contractor technical support.  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$53                       | Required printing and reproduction of the JTT/MATT technical orders.  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$40                       | Travel required to support Tactical Terminal program reviews and integration of the MATT into the JTT family. |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$238                      | Total   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| Project 674395  |                            | Page 1 of 4 Pages   |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2 (PE 0305158F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                             |          | DATE     | February 2000 |          |          |          |                  |            |
|---|---|-----------------------------|----------|----------|---------------|----------|----------|----------|------------------|------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE         |          | PROJECT  |               |          |          |          |                  |            |
| 07 - Operational System Development                 |   | 0305158F Tactical Terminals |          | 674395   |               |          |          |          |                  |            |
| (U)   | <b>B. Budget Activity Justification</b>   |                             |          |          |               |          |          |          |                  |            |
|   | This Program Element is assigned in Budget Activity 7, Operational System Development because it involves post-Milestone III efforts and supports development of operational systems. The Program Element also supports the Joint Tactical Terminals/ Common Integrated Broadcast Service Modules (JTT/CIBS-M) efforts for the Air Force. |                             |          |          |               |          |          |          |                  |            |
| (U)   | <b>C. Program Change Summary (\$ in Thousands)</b>  |                             |          |          |               |          |          |          |                  |            |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999                     | FY 2000  | FY 2001  | Total Cost    |          |          |          |                  |            |
| (U)   | Appropriated Value  | 234                         | 0        | 238      | TBD           |          |          |          |                  |            |
| (U)   | Adjustments to Appropriated Value   | 237                         | 239      |          |               |          |          |          |                  |            |
|   | a. Congressional/General Reductions   | -3                          | -239     |          |               |          |          |          |                  |            |
|   | b. Small Business Innovative Research   | -5                          |          |          |               |          |          |          |                  |            |
|   | c. Omnibus or Other Above Threshold Reprogram   |                             |          |          |               |          |          |          |                  |            |
|   | d. Below Threshold Reprogram  | -67                         |          |          |               |          |          |          |                  |            |
|   | e. Rescissions  | -1                          |          |          |               |          |          |          |                  |            |
|   | f. Other  | 0                           | 0        |          | TBD           |          |          |          |                  |            |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |                             |          |          |               |          |          |          |                  |            |
| (U)   | Current Budget Submit/FY 2001 PBR   | 161                         | 0        | 238      | TBD           |          |          |          |                  |            |
| (U)   | Significant Program Changes:  |                             |          |          |               |          |          |          |                  |            |
| (U)   | <b>D. Other Program Funding Summary (\$ in Thousands)</b>   |                             |          |          |               |          |          |          |                  |            |
|   |   | FY 1999                     | FY 2000  | FY 2001  | FY 2002       | FY 2003  | FY 2004  | FY 2005  | Cost to Complete | Total Cost |
|   |   | Actual                      | Estimate | Estimate | Estimate      | Estimate | Estimate | Estimate |                  |            |
| (U)   | AF RDT&E  |                             |          |          |               |          |          |          |                  |            |
| (U)   | Other APPN  |                             |          |          |               |          |          |          |                  |            |
| (U)   | Other Procurement AF, Budget Activity 3, Weapon System Code 832070 PE 305158  | 6,966                       | 24,218   | 3,574    | 4,357         | 4,361    | 4,453    | 4,511    | Continuing       | TBD        |
| Project 674395                                      |   |                             |          |          |               |          |          |          |                  |            |
| Page 2 of 4 Pages                                   |   |                             |          |          |               |          |          |          |                  |            |
| Exhibit R-2 (PE 0305158F)                           |   |                             |          |          |               |          |          |          |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                             | DATE    | February 2000 |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
|---|-----------------------------|---------|---------------|---|---------|---|---------|--|---------|--|--|---|---|---|---|---|---|------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------------------|--|--|--|--|--|--|--------------------------|--|--|--|--|--|--|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE         | PROJECT |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| 07 - Operational System Development   | 0305158F Tactical Terminals | 674395  |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| <p>(U) <b>E. Acquisition Strategy</b></p> <ul style="list-style-type: none"> <li>- Technology transfer from the Naval Research Laboratory to the contractor. Evolutionary acquisition strategy for the MATT was implemented with a core capability procured during the first production option. Firm Fixed Price.</li> <li>- The JTT/CIBS-M Program is managed by the Army's Communications-Electronics Command (CECOM). Air Force JTT and CIBS-M procurement requirements will be forwarded to PM-JTT (Army) by Aerospace Command and Control Intelligence Surveillance and Reconnaissance Center (AC2ISRC)</li> </ul>   |                             |         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| <p>(U) <b>F. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) JTT Delivery</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) MATT Software Release (JTT CIBS-M)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) MATT software Version Upgrade (SPAWAR)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>* denotes completed events</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X denotes planned events</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                             |         |               |   | FY 1999 |   | FY 2000 |  | FY 2001 |  |  | 1 | 2 | 3 | 4 | 1 | 2 | (U) JTT Delivery |  |  |  |  |  |  | (U) MATT Software Release (JTT CIBS-M) |  |  |  |  |  |  | (U) MATT software Version Upgrade (SPAWAR) |  |  |  |  |  |  | * denotes completed events |  |  |  |  |  |  | X denotes planned events |  |  |  |  |  |  |
|   | FY 1999                     |         | FY 2000       |   | FY 2001 |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
|   | 1                           | 2       | 3             | 4 | 1       | 2 |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| (U) JTT Delivery  |                             |         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| (U) MATT Software Release (JTT CIBS-M)  |                             |         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| (U) MATT software Version Upgrade (SPAWAR)  |                             |         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| * denotes completed events  |                             |         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |
| X denotes planned events  |                             |         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |                          |  |  |  |  |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                             |  |         |  |        |  |  |  | DATE | February 2000 |
|--|--|-----------------------------|--|---------|--|--------|--|--|--|------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE         |  | PROJECT |  | 674395 |  |  |  |      |               |
| 07 - Operational System Development                |  | 0305158F Tactical Terminals |  |         |  |        |  |  |  |      |               |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |                             |  |         |  |        |  |  |  |      |               |
| (U)  | Software Development   |                             |  |         |  |        |  |  |  |      |               |
| (U)  | Program Management Administration (PMA)                                  |                             |  |         |  |        |  |  |  |      |               |
| (U)  | In-house Contractor Technical Support                                    |                             |  |         |  |        |  |  |  |      |               |
| (U)  | Total  |                             |  |         |  |        |  |  |  |      |               |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |                             |  |         |  |        |  |  |  |      |               |
| (U)  | Performing Organizations:  |                             |  |         |  |        |  |  |  |      |               |
|  | Contractor or  |                             |  |         |  |        |  |  |  |      |               |
|  | Government   |                             |  |         |  |        |  |  |  |      |               |
|  | Performing   |                             |  |         |  |        |  |  |  |      |               |
|  | Activity   |                             |  |         |  |        |  |  |  |      |               |
|  | Product Development Organizations  |                             |  |         |  |        |  |  |  |      |               |
|  | Allied Signal, Inc.  |                             |  |         |  |        |  |  |  |      |               |
|  | MDA911-93-C0008  |                             |  |         |  |        |  |  |  |      |               |
|  | Support and Management Organizations                                     |                             |  |         |  |        |  |  |  |      |               |
|  | Mission Support  |                             |  |         |  |        |  |  |  |      |               |
|  | Test and Evaluation Organizations  |                             |  |         |  |        |  |  |  |      |               |
|  | Subtotals  |                             |  |         |  |        |  |  |  |      |               |
|  | Subtotal Product Development   |                             |  |         |  |        |  |  |  |      |               |
|  | Subtotal Support and Management  |                             |  |         |  |        |  |  |  |      |               |
|  | Subtotal Test and Evaluation   |                             |  |         |  |        |  |  |  |      |               |
|  | Total Project  |                             |  |         |  |        |  |  |  |      |               |

Project 674395

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |  |
|---|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|--|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |  |
| 07 - Operational System Development                 |   | 0305160F Defense Meteorological Satellite Program  |                  |                  |                  |                  |                  |                  |                  | 674758     |               |  |
|   | COST (\$ in Thousands)  | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |  |
| 674758  | DMSP Program  | 19,983   | 21,207           | 25,372           | 14,934           | 11,882           | 11,131           | 11,396           | 22,057           | 955,279    |               |  |
|   | Quantity of RDT&E Articles  | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |  |
| (U)   | <b>A. Mission Description</b><br>The Defense Meteorological Satellite Program (DMSP) is a fully operational joint-service program supporting all military services. Operational commanders require timely, quality weather information to effectively employ weapon systems and protect DoD resources. DMSP is the DoD's most important and often the only source of global weather data. It provides visible and infrared cloud cover imagery (1/3 nm constant resolution) and other meteorological, oceanographic, and solar-geophysical information. This data is required over the entire earth to support global and theater military operations. At least two satellites are required in sun-synchronous, 450nm polar-orbit at all times (sun-synchronous means the satellites cross the equator at the same local sun time on each of their 14 orbits/day). Presidential Decision Directive PDD/NSTC-2 directed convergence of DMSP with the National Oceanic and Atmospheric Administration's (NOAA) polar-orbiting weather satellite system. A key step towards full program convergence was achieved in FY98 when DMSP satellite operations consolidated with NOAA satellite operations at NOAA's Suitland, MD, Satellite Operations Control Center (SOCC). DMSP F-15 was launched on a Titan-II booster in Dec 99. DMSP F-16 will be the last DMSP to launch on a Titan-II booster and is currently scheduled to launch in the Fall of 2000. The remaining DMSPs, F-17 through F-20, are all manifested to launch on the new Evolved Expendable Launch Vehicle (EELV) booster. |  |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | FY 1999 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$12,593  | Continued system integration and test, miscellaneous calibration and validation, and related support activities                    |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$1,195   | Continued Titan II integration effort (transition from Atlas E due to inventory depletion)   |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$1,910   | Began EELV interface design (transition to EELV)   |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$505   | Began Small Tactical Terminal (field portable weather terminal) Special Sensor Microwave Imager/ Sounder (SSMIS) software upgrades |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$565   | Completed Mark IVB tactical weather terminal software upgrade for the next block of satellites (5D-3)                              |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$3,215   | Began integration studies & test analysis to retrofit DMSP satellites with Solid State Recorders (SSRs)                            |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U)   | \$19,983  | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |  |

Project 674758

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Exhibit R-2 (PE 0305160F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)    |  | DATE                      | February 2000 |
|--|--|---------------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  | PROJECT                   |               |
| <b>07 - Operational System Development</b>             | <b>0305160F Defense Meteorological Satellite Program</b>   | <b>674758</b>             |               |
| (U) <b>A. Mission Description Continued</b>            |  |                           |               |
| (U) FY 2000 (\$ in Thousands)                          |  |                           |               |
| (U) \$13,311   | Continue system integration and test, and related support activities   |                           |               |
| (U) \$1,288  | Continue Titan II integration effort (transition from Atlas E due to inventory depletion)  |                           |               |
| (U) \$4,472  | Continue EELV interface design (transition to EELV)  |                           |               |
| (U) \$636  | Continue Small Tactical Terminal (field portable weather terminal) SSMIS software upgrades   |                           |               |
| (U) \$1,500  | Begin SSMIS calibration and validation   |                           |               |
| (U) \$21,207   | Total  |                           |               |
| (U) FY 2001 (\$ in Thousands)                          |  |                           |               |
| (U) \$15,594   | Continue system integration and test, and related support activities   |                           |               |
| (U) \$1,718  | Continue launch vehicle integration effort   |                           |               |
| (U) \$1,682  | Continue EELV interface design (transition to EELV)  |                           |               |
| (U) \$497  | Continue Small Tactical Terminal (Field Portable Weather Terminal) SSMIS software upgrades   |                           |               |
| (U) \$2,881  | Continue integration studies and test analysis to retrofit DMSP satellites with SSRs   |                           |               |
| (U) \$3,000  | Continue SSMIS calibration and validation  |                           |               |
| (U) \$25,372   | Total  |                           |               |
| (U) <b>B. Budget Activity Justification</b>            |  |                           |               |
|  | This program is in Budget Activity 7, Operational Systems Development, because it supports the current operational DMSP constellation. |                           |               |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b> |  |                           |               |
| (U) Previous President's Budget (FY 2000 PBR)          |  | FY 2000                   | FY 2001       |
| (U) Appropriated Value                                 |  | 17,397                    | 21,535        |
| (U) Adjustments to Appropriated Value                  |  | 17,932                    | 21,535        |
| a. Congressional/General Reductions                    |  | -770                      | -45           |
| b. Small Business Innovative Research                  |  | -517                      | -517          |
| c. Omnibus or Other Above Threshold Reprogram          |  | 3,450                     | -116          |
| d. Below Threshold Reprogram                           |  | -112                      | 3,450         |
| e. Rescissions   |  |                           | -279          |
| f. Other   |  |                           | 61,536        |
|  |  |                           | Total Cost    |
|  |  |                           | 892,020       |
| Project 674758   |  | Exhibit R-2 (PE 0305160F) |               |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |   |          | DATE                      | PROJECT    |          |          |          |          |
|---|--|---|----------|---------------------------|------------|----------|----------|----------|----------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                               |          |                           |            |          |          |          |          |
| 07 - Operational System Development                 |  | 0305160F Defense Meteorological Satellite Program |          |                           | 674758     |          |          |          |          |
| (U)   | <u>C. Program Change Summary (\$ in Thousands) Continued</u>   |   |          |                           |            |          |          |          |          |
|   |  | FY 1999   | FY 2000  | FY 2001                   | Total Cost |          |          |          |          |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |   |          | -566                      |            |          |          |          |          |
| (U)   | Current Budget Submit/FY 2001 PBR  | 19,983  | 21,207   | 25,372                    | 955,279    |          |          |          |          |
| (U)   | <u>Significant Program Changes:</u>  |   |          |                           |            |          |          |          |          |
|   | Funding:   |   |          |                           |            |          |          |          |          |
|   | FY99 adjusted: \$3,450 below threshold reprogramming for integration studies/analysis for solid state data recorders for DMSPs F-15 & F-16.  |   |          |                           |            |          |          |          |          |
|   | FY01 adjusted: \$2,941 transferred to the Air Force Weather Agency for DMSP tactical terminals. \$2,375 added to fund solid state recorders. |   |          |                           |            |          |          |          |          |
|   | Total program costs increased due to definitization of outyear funding requirements.   |   |          |                           |            |          |          |          |          |
|   | Schedule: None   |   |          |                           |            |          |          |          |          |
|   | Technical: None  |   |          |                           |            |          |          |          |          |
| (U)   | <u>D. Other Program Funding Summary (\$ in Thousands)</u>  |   |          |                           | Total Cost |          |          |          |          |
|   |  | FY 1999   | FY 2000  | FY 2001                   | FY 2002    | FY 2003  | FY 2004  | FY 2005  | Cost to  |
|   |  | Actual  | Estimate | Estimate                  | Estimate   | Estimate | Estimate | Estimate | Complete |
| (U)   | AF RDT&E   |   |          |                           |            |          |          |          |          |
| (U)   | Other APPN   |   |          |                           |            |          |          |          |          |
| (U)   | Missile Procurement/PE   | 40,607  | 35,775   | 68,582                    | 48,695     | 58,176   | 50,069   | 49,134   | 88,600   |
|   | 0305160F (Budget Activity 5,   |   |          |                           |            |          |          |          |          |
|   | Line Item P-27)  |   |          |                           |            |          |          |          |          |
| (U)   | Other Procurement/PE   | 12,215  | 1,823    | 0                         | 0          | 0        | 0        | 0        | 0        |
|   | 0305160F   |   |          |                           |            |          |          |          |          |
|   | (Line Item P-63) FY01 and  |   |          |                           |            |          |          |          |          |
|   | out funds transferred to PE  |   |          |                           |            |          |          |          |          |
|   | 0305111F for DMSP tactical   |   |          |                           |            |          |          |          |          |
|   | terminals.   |   |          |                           |            |          |          |          |          |
|   | Related RDT&E:   |   |          |                           |            |          |          |          |          |
|   | PE 0603434F, National Polar-orbiting Operational Environmental Satellite System (NPOESS)   |   |          |                           |            |          |          |          |          |
|   | PE 0305160N, DMSP (provides funds for Navy unique studies)   |   |          |                           |            |          |          |          |          |
| Project 674758                                      |  | Page 3 of 7 Pages                                 |          | Exhibit R-2 (PE 0305160F) |            |          |          |          |          |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                     | DATE  | February 2000 |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
|--|---------------------|---|---------------|---|---------|---------|--|---------|--|---------|--|--|---|---|---|---|---|---|---|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|------------------------------------|--|--|---|---|--|--|---------------------|--|--|--|--|--|--|-------------------|--|--|--|--|---|--|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE | PROJECT   |               |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| <b>07 - Operational System Development</b>   |                     | <b>0305160F Defense Meteorological Satellite Program 674758</b> |               |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| <p>(U) <b>E. Acquisition Strategy</b><br/>           Support and services contracts for the spacecraft, sensors, ground systems, and supporting software have been awarded to various contractors. No major milestone decisions remain. The program is focused on successful completion of current contracts and contractor support for spacecraft, sensors, and ground systems already procured.</p>  |                     |   |               |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| <p>(U) <b>F. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) Small Tactical Terminal Deliveries Complete</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) 5D-3 Spacecraft Delivery (S-20)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Satellite Launches (F-15/F-16)</td> <td></td> <td></td> <td>*</td> <td>*</td> <td></td> <td></td> </tr> <tr> <td>* = Completed event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X = Planned event</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> </tr> </tbody> </table> |                     |   |               |   |         | FY 1999 |  | FY 2000 |  | FY 2001 |  |  | 1 | 2 | 3 | 4 | 1 | 2 | (U) Small Tactical Terminal Deliveries Complete |  |  |  |  |  |  | (U) 5D-3 Spacecraft Delivery (S-20) |  |  |  |  |  |  | (U) Satellite Launches (F-15/F-16) |  |  | * | * |  |  | * = Completed event |  |  |  |  |  |  | X = Planned event |  |  |  |  | X |  |
|  | FY 1999             |   | FY 2000       |   | FY 2001 |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
|  | 1                   | 2   | 3             | 4 | 1       | 2       |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| (U) Small Tactical Terminal Deliveries Complete  |                     |   |               |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| (U) 5D-3 Spacecraft Delivery (S-20)  |                     |   |               |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| (U) Satellite Launches (F-15/F-16)   |                     |   | *             | * |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| * = Completed event  |                     |   |               |   |         |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |
| X = Planned event  |                     |   |               |   | X       |         |  |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                                    |  |  |   |   |  |  |                     |  |  |  |  |  |  |                   |  |  |  |  |   |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |  |                          |                         | DATE               | PROJECT            |
|--|--|--------------------------|-------------------------|--------------------|--------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                                      |                          |                         |                    |                    |
| <b>07 - Operational System Development</b>   | <b>0305160F Defense Meteorological Satellite Program</b> |                          |                         |                    | <b>674758</b>      |
| (U) <b>A. Project Cost Breakdown (\$ in Thousands)</b>   |  |                          |                         |                    |                    |
| (U) Launch Vehicle Transition*   |  | FY 1999                  | FY 2000                 | FY 2001            |                    |
| (U) Spacecraft Integration and Test#   |  | 2,145                    | 5,432                   | 3,400              |                    |
| (U) Calibration/Validation^  |  | 6,880                    | 3,984                   | 9,701              |                    |
| (U) Algorithm Development  |  | 84                       | 1,500                   | 3,109              |                    |
| (U) MARK IVB/STT Enhancements  |  | 954                      | 1,025                   | 1,001              |                    |
| (U) Systems Engineering Support  |  | 2,143                    | 1,076                   | 497                |                    |
| (U) Program Management Support   |  | 4,775                    | 4,765                   | 3,697              |                    |
| (U) Total  |  | 3,002                    | 3,425                   | 3,967              |                    |
|  |  | 19,983                   | 21,207                  | 25,372             |                    |
| * Launch Vehicle Transition funding increases in FY00 due to critical studies & analysis required to integrate DMSP spacecraft to new EELV booster. Bulk of activity must be accomplished in FY00 to maintain integration and launch schedule for DMSP F-17.   |  |                          |                         |                    |                    |
| # Spacecraft Integration and Test funding increases in FY01 due to Special Sensor Microwave Imager/Sounder (SSMIS) and Solid State Recorder integration studies/analysis for DMSP F-17.  |  |                          |                         |                    |                    |
| ^ Calibration/Validation funding increases in FY01 due to required Naval Research Laboratory calibration & validation of the first on-orbit SSMIS. DMSP F-16 scheduled to launch in early FY01 will carry the first SSMIS. Critical calibration/validation work is required to enable the new sensor to provide operationally useful data. |  |                          |                         |                    |                    |
| (U) <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>  |  |                          |                         |                    |                    |
| (U) <b>Performing Organizations:</b>   |  |                          |                         |                    |                    |
| Contractor or Government   | Contract Method/Type                                     | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Project Office EAC |
| Performing Activity  | Vehicle  |                          |                         |                    |                    |
| Product Development Organizations  |  |                          |                         |                    |                    |
| Lockheed-Martin  | SS/CPAF  | Apr 92                   | 3,764                   | 3,764              | 3,764              |
| Lockheed-Martin  | SS/CPAF  | May 97                   | 29,631                  | 29,631             | 29,333             |
| Northrop-Grumman   | SS/CPAF  | May 95                   | 5,926                   | 5,926              | 5,511              |
| TBD (OLS Sys Eng Spt)  | TBD  | Dec 00                   | 750                     | 750                | 750                |
| Lockheed-Martin  | C/CPAF   | Oct 88                   | 39,513                  | 39,513             | 39,513             |
| Harris   | C/CPAF   | Jun 94                   | 8,329                   | 8,329              | 8,217              |
| Total  |  |                          |                         |                    |                    |
|  |  |                          | 1,533                   | 1,133              | 0                  |
| Exhibit R-3 (PE 0305160F)  |  |                          |                         |                    |                    |
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| Project 674758   |  |                          |                         |                    |                    |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |              |                     |        | DATE   | February 2000 | PROJECT |
|--|--------------|---------------------|--------|--|---------------|---------|
| BUDGET ACTIVITY  |              | PE NUMBER AND TITLE |        | 0305160F Defense Meteorological Satellite Program 674758 |               |         |
| 07 - Operational System Development  |              |                     |        |  |               |         |
| (U) Performing Organizations Continued:  |              |                     |        |  |               |         |
| Product Development Organizations  |              |                     |        |  |               |         |
| Det 11/GSA   | MIPR         | Jan 97              | 2,986  | 2,986  | 2,421         | 565     |
| SMC/CL (Titan)   | PO           | Oct 94              | 6,921  | 6,921  | 1,821         | 1,543   |
| Aerojet  | SS/CPAF      | May 92              | 2,530  | 2,530  | 2,530         | 0       |
| Aerojet  | C/CPAF/FFP   | Mar 89              | 85,979 | 85,979   | 85,979        | 0       |
| Aerojet  | SS/CPAF      | May 98              | 5,321  | 5,321  | 786           | 1,006   |
| Hughes   | SS/CPFF      | May 96              | 371    | 371  | 157           | 70      |
| AFRL   | MIPR/PD      | Oct 95              |        |  | 4,055         | 570     |
| NRL  | MIPR/Various | Oct 95              |        |  | 5,231         | 1,306   |
| APL  | MIPR/Various | Oct 95              |        |  | 1,854         | 770     |
| SMC (Det 3 SSSG/NPOESS)  | FCA/MIPR     | Dec 95              |        |  | 2,506         | 0       |
| Sandia   | MIPR/Various | Oct 96              |        |  | 200           | 420     |
| Other  | Various      |                     |        |  | 2,343         | 373     |
| Historical Satellite Blocks  | Various      |                     |        |  | 583,786       |         |
| Support and Management Organizations   |              |                     |        |  |               |         |
| FFRDC  | MORD*        | Oct 95              |        |  | 13,040        | 2,575   |
| PRC/bd Systems   | C/CPAF       | Aug 95              |        |  | 4,522         | 1,270   |
| Program Mgmt   |              |                     |        |  | 12,563        | 3,002   |
| Litigation Support   |              |                     |        |  | 1,809         |         |
| Other  | Various      | Jul 91              |        |  | 1,958         | 0       |
| Historical Satellite Blocks  | Various      |                     |        |  | 38,530        | 0       |
| *MORD - Miscellaneous Obligation/Reimbursement Document -a vehicle/method for committing and obligating funds. In this case the program office sends a letter to SMC/FM to commit & obligate the funds programmed for Aerospace support. |              |                     |        |  |               |         |
| Test and Evaluation Organizations  |              |                     |        |  |               |         |
| NONE   |              |                     |        |  |               |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                     |         |         | DATE   | February 2000 | PROJECT |
|--|-------------|---------------------|---------|---------|--|---------------|---------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE |         |         | 0305160F Defense Meteorological Satellite Program 674758 |               |         |
| 07 - Operational System Development                |             |                     |         |         |  |               |         |
| (U) Government Furnished Property:                 |             |                     |         |         |  |               |         |
| Contract   |             |                     |         |         |  |               |         |
| Method/Type Award or                               |             |                     |         |         |  |               |         |
| or Funding Obligation                              |             |                     |         |         |  |               |         |
| Vehicle Date                                       |             |                     |         |         |  |               |         |
| Delivery Date                                      |             |                     |         |         |  |               |         |
| Item   | Total Prior | Budget              | Budget  | Budget  | Budget   | Budget to     | Total   |
| Description  | to FY 1999  | FY 1999             | FY 2000 | FY 2001 | FY 2000  | Complete      | Program |
| Product Development Property                       |             |                     |         |         |  |               |         |
| NONE   |             |                     |         |         |  |               |         |
| Support and Management Property                    |             |                     |         |         |  |               |         |
| NONE   |             |                     |         |         |  |               |         |
| Test and Evaluation Property                       |             |                     |         |         |  |               |         |
| NONE   |             |                     |         |         |  |               |         |
| Subtotals  | Total Prior | Budget              | Budget  | Budget  | Budget   | Budget to     | Total   |
| Subtotal Product Development                       | to FY 1999  | FY 1999             | FY 2000 | FY 2001 | FY 2000  | Complete      | Program |
| Subtotal Support and Management                    | 744,433     | 13,136              | 13,780  | 17,708  | 40,818   |               | 829,875 |
| Subtotal Test and Evaluation                       | 72,422      | 6,847               | 7,427   | 7,664   | 31,044   |               | 125,404 |
| Total Project                                      | 816,855     | 19,983              | 21,207  | 25,372  | 71,862   |               | 955,279 |

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Exhibit R-3 (PE 0305160F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                            |   | DATE   |                  | February 2000    |                  |                  |                  |                  |                  |            |
|--|----------------------------|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY  |                            |   | PE NUMBER AND TITLE                                      |                  | PROJECT          |                  |                  |                  |                  |                  |            |
| 07 - Operational System Development  |                            |   | 0305164F NAVSTAR Global Positioning System (User 673028) |                  | PROJECT          |                  |                  |                  |                  |                  |            |
|  |                            |   | (EQ) Space)  |                  |                  |                  |                  |                  |                  |                  |            |
| COST (\$ in Thousands)   |                            |   | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
| 673028   | Navstar GPS                |   | 36,944   | 49,244           | 66,975           | 50,425           | 50,469           | 50,535           | 50,653           | Continuing       | TBD        |
|  | Quantity of RDT&E Articles |   | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |
| <b>(U) A. Mission Description</b>  |                            |   |  |                  |                  |                  |                  |                  |                  |                  |            |
| The Global Positioning System (GPS) is a space-based radio positioning, navigation, and time distribution system. GPS User Equipment (UE) consists of standardized receivers, antennae, antenna electronics, etc., grouped together in sets to derive navigation and time information transmitted from GPS satellites. These receiver sets are used by all Services and DoD. RDT&E funds UE development and testing, studies and engineering to assist UE aircraft integration, software upgrades, product improvement studies, commercial GPS UE test and evaluation, and mission support. Due to increasing military GPS dependence and emerging Electronic Warfare (EW) threat, Navigation Warfare (Navwar) program was established to address EW solutions for GPS. Key elements of GPS Modernization include protecting U.S. military and allies' use of GPS, preventing hostile exploitation of GPS, and preserving civil use of GPS outside the area of operations (AOO). |                            |   |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | FY 1999 (\$ in Thousands)  |   |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$731                      | Continued aircraft integration development testing  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$3,324                    | Continued development and product improvement testing and evaluation  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$2,890                    | Continue ACTD - Protection  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$1,163                    | Complete ACTD - Prevention  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$365                      | Continued Navwar modeling & simulation efforts  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$106                      | Complete Navwar Evaluation Team (NET) support   |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$1,762                    | Continued support contract  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$15,158                   | Continued GPS Receiver Application Module - Selective Availability Anti-Spoofing Module (GRAM-SAAASM) development |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$4,294                    | Continued SAAASM development  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$239                      | Completed Defense Advanced GPS Receiver (DAGR) study effort   |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$4,701                    | Began Advanced User Equipment Technology efforts  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$707                      | Continued Modernization efforts   |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$1,504                    | Continued in-house support  |  |                  |                  |                  |                  |                  |                  |                  |            |
| (U)  | \$36,944                   | Total   |  |                  |                  |                  |                  |                  |                  |                  |            |
| Project 673028   |                            |   | Page 1 of 9 Pages  |                  |                  |                  |                  |                  |                  |                  |            |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   | DATE                      | PROJECT       |
|---|---|---------------------------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE   |                           |               |
| 07 - Operational System Development                 | 0305164F NAVSTAR Global Positioning System (User 673028 EQ) Space)                    |                           | February 2000 |
| <b>(U) A. Mission Description Continued</b>         |   |                           |               |
| (U) FY 2000 (\$ in Thousands)                       |   |                           |               |
| (U) \$736   | Continue aircraft integration development testing                                     |                           |               |
| (U) \$5,070   | Continue development and product improvement testing and evaluation                   |                           |               |
| (U) \$3,500   | Complete ACTD (Protection) objectives under Joint GPS Combat Evaluation (JGPSCE) Demo |                           |               |
| (U) \$11,000  | Continue classified requirement   |                           |               |
| (U) \$4,500   | Continue SAASM development  |                           |               |
| (U) \$6,100   | Continue GRAM-SAASM development and begin platform demonstrations                     |                           |               |
| (U) \$3,685   | Continue in-house support   |                           |               |
| (U) \$1,934   | Continue support contract   |                           |               |
| (U) \$6,500   | Continue advanced UE technology effort (Receivers)                                    |                           |               |
| (U) \$2,950   | Continue advanced UE technology effort (Anti-Jam Filters)                             |                           |               |
| (U) \$3,269   | Continue advanced UE technology effort (Advanced Antenna)                             |                           |               |
| (U) \$49,244  | Total   |                           |               |
| (U) FY 2001 (\$ in Thousands)                       |   |                           |               |
| (U) \$659   | Continue aircraft integration development testing                                     |                           |               |
| (U) \$16,000  | Begin advance UE Protection development (Receiver, Antenna)                           |                           |               |
| (U) \$2,300   | Continue development and product improvement testing and evaluation                   |                           |               |
| (U) \$13,100  | Continue SAASM development  |                           |               |
| (U) \$10,000  | Continue Modernization efforts (SAASM M-Code development)                             |                           |               |
| (U) \$3,696   | Continue in-house support   |                           |               |
| (U) \$2,116   | Continue support contract   |                           |               |
| (U) \$8,000   | Continue classified requirement   |                           |               |
| (U) \$7,054   | Continue advanced UE technology effort (Receivers)                                    |                           |               |
| (U) \$2,050   | Continue advanced UE technology effort (Advanced Antenna)                             |                           |               |
| (U) \$2,000   | Continue advanced UE technology effort (Anti-Jam Filters)                             |                           |               |
| (U) \$66,975  | Total   |                           |               |
| Project 673028                                      |   | Page 2 of 9 Pages         |               |
|   |   | Exhibit R-2 (PE 0305164F) |               |

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| <b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b> |  |  |                  |                      |                  | <b>DATE</b>      | <b>PROJECT</b> |
|--|--|--|------------------|----------------------|------------------|------------------|----------------|
| <b>BUDGET ACTIVITY</b>   |  | <b>PE NUMBER AND TITLE</b>   |                  |                      |                  |                  |                |
| <b>07 - Operational System Development</b>                     |  | <b>0305164F NAVSTAR Global Positioning System (User EQ) Space)</b> |                  | <b>February 2000</b> |                  |                  |                |
| (U)  | <b>B. Budget Activity Justification</b>  |  |                  |                      |                  |                  |                |
|  | This program element is in Budget Activity 7 - Operational System Development, because UE passed Milestone IIB in January 1992.  |  |                  |                      |                  |                  |                |
| (U)  | <b>C. Program Change Summary (\$ in Thousands)</b>   |  |                  |                      |                  |                  |                |
|  | Previous President's Budget (FY 2000 PBR)  | FY 1999  | FY 2000          | FY 2001              | Total Cost       |                  |                |
| (U)  | Appropriated Value   | 36,234   | 53,963           | 41,471               | TBD              |                  |                |
| (U)  | Adjustments to Appropriated Value  | 36,638   | 49,913           |                      |                  |                  |                |
|  | a. Congressional/General Reductions  | -404   | -10              |                      |                  |                  |                |
|  | b. Small Business Innovative Research  | -685   |                  |                      |                  |                  |                |
|  | c. Omnibus or Other Above Threshold Reprogram  | 825  | -270             |                      |                  |                  |                |
|  | d. Below Threshold Reprogram   | 777  |                  |                      |                  |                  |                |
|  | e. Rescissions   | -207   |                  |                      |                  |                  |                |
|  | f. Other   |  |                  |                      |                  | TBD              |                |
| (U)  | Adjustments to Budget Years Since FY 2000 PBR  |  |                  | 25,504               |                  |                  |                |
| (U)  | Current Budget Submit/FY 2001 PBR  | 36,944   | 49,244           | 66,975               |                  | TBD              |                |
| (U)  | <b>Significant Program Changes:</b>  |  |                  |                      |                  |                  |                |
|  | FY 2001 increase funds GPS UE Navwar Anti-Jam Technology/Modernization Security Architecture (SAASM), development efforts. Changed timing of DAGR procurement to FY02. |  |                  |                      |                  |                  |                |
| (U)  | <b>D. Other Program Funding Summary (\$ in Thousands)</b>  |  |                  |                      |                  |                  |                |
|  | FY 1999 Actual   | FY 2000 Estimate   | FY 2001 Estimate | FY 2002 Estimate     | FY 2003 Estimate | FY 2004 Estimate |                |
| (U)  | AF RDT&E   |  |                  |                      |                  |                  |                |
| (U)  | Other APPN   |  |                  |                      |                  |                  |                |
| (U)  | Operations and Maintenance (PE 0305164F, BA 1 - Operating Forces, SAG 13D)   | 2,122  | 966              | 2,211                | 2,266            | 6,833            |                |
|  | Aircraft Procurement (PE 0305164F, BA 7, Aircraft  | 35,295   | 35,449           | 39,290               | 76,549           | 89,559           |                |
|  |  |  |                  | 57,452               | 117,105          | Continuing       |                |
|  |  |  |                  |                      |                  | Continuing       |                |

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Exhibit R-2 (PE 0305164F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |  |          | DATE     |          | February 2000             |          |          |            |            |
|---|---|--|----------|----------|----------|---------------------------|----------|----------|------------|------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE  |          |          |          | PROJECT                   |          |          |            |            |
| 07 - Operational System Development                 |   | 0305164F NAVSTAR Global Positioning System (User 673028 EQ) Space) |          |          |          |                           |          |          |            |            |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  | FY 1999  | FY 2000  | FY 2001  | FY 2002  | FY 2003                   | FY 2004  | FY 2005  | Cost to    | Total Cost |
|   |   | Actual   | Estimate | Estimate | Estimate | Estimate                  | Estimate | Estimate | Complete   |            |
|   | Support Equipment, BP19, P-74)  | 3,321  | 2,325    | 1,658    | 4,402    | 4,409                     | 4,773    | 4,394    | Continuing | Continuing |
| (U)   | Other Procurement (PE 0305164F, BP 63 - Electronics & Telecommunications Equipment, WSC 6730, P-62)   |  |          |          |          |                           |          |          |            |            |
| (U)   | OSD RDT&E (ACTD Funding: PE 0603750D)   | 300  |          |          |          |                           |          |          |            |            |
|   | Related RDT&E:  |  |          |          |          |                           |          |          |            |            |
|   | PE 0305165F, NAVSTAR GPS (Space/Grd Segments)   |  |          |          |          |                           |          |          |            |            |
|   | PE 0604480F, GPS Block IIF  |  |          |          |          |                           |          |          |            |            |
|   | PE 0305176F, Combat Survivor/Evader Locator   |  |          |          |          |                           |          |          |            |            |
| (U)   | E. Acquisition Strategy   |  |          |          |          |                           |          |          |            |            |
|   | Several ongoing and planned concept definition and technology risk reduction programs will define and mature required GPS technologies needed for GPS Modernization. Our strategy will develop open system like architecture for a GPS receiver based on the GPS Receiver Application Module (GRAM) concept. The GRAM-SAASM program is a further risk reduction effort to integrate the GPS receiver operations internally between GRAM and SAASM. Also, several anti-jam technology risk reduction efforts will be pursued to mature technologies and prepare for technology insertion. Continue to work with platforms/users to identify requirements and upgrade paths to insert GPS enhancements. |  |          |          |          |                           |          |          |            |            |
| (U)   | F. Schedule Profile   |  |          |          | FY 1999  |                           | FY 2000  |          | FY 2001    |            |
| Project 673028                                      |   | Page 4 of 9 Pages  |          |          |          | Exhibit R-2 (PE 0305164F) |          |          |            |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  | DATE   |   | February 2000 |   |   |   |   |   |
|---|--|--|---|---------------|---|---|---|---|---|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE  |   | PROJECT       |   |   |   |   |   |
| 07 - Operational System Development                 |  | 0305164F NAVSTAR Global Positioning System (User 673028 EQ) Space) |   | 0305164F      |   |   |   |   |   |
| (U) F. Schedule Profile Continued                   |  | FY 1999  |   | FY 2000       |   |   |   |   |   |
|   |  | 1  | 2 | 3             | 4 | 1 | 2 | 3 | 4 |
| (U)   | GPS ORD validation   |  |   | *             |   |   |   |   |   |
| (U)   | GPS OIPT   | *  |   |               |   |   |   |   |   |
| (U)   | Advance UE Technology (ie Receiver, Antenna, Filter efforts) | *  | * | *             | * | * | * | * | * |
| (U)   | Navwar AOA brief to JROC                                     |  |   |               |   |   |   |   |   |
| (U)   | Defense Science Board  |  |   |               |   |   |   |   |   |
| (U)   | GRAM-SAAASM ICD Complete                                     |  |   |               |   |   |   |   |   |
| (U)   | GRAM-SAAASM preproduction prototypes deliveries              |  |   |               |   |   |   |   |   |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                           |  |         | DATE    | February 2000 |
|--|--|---------|---------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  | PROJECT |         |               |
| 07 - Operational System Development  | 0305164F NAVSTAR Global Positioning System (User 673028 EQ) Space) |         |         |               |
| (U) A. Project Cost Breakdown (\$ in Thousands)                              |  |         |         |               |
| (U) Technical Support for Aircraft Integration                               |  |         | FY 1999 | FY 2000       |
| (U) Development & Product Improvement Testing                                |  |         | 731     | 736           |
| (U) ACTD - Protection  |  |         | 3,324   | 5,070         |
| (U) ACTD - Prevention  |  |         | 2,890   | 3,500         |
| (U) Adv UE Protection development  |  |         | 1,163   | 0             |
| (U) Support Contracts  |  |         | 0       | 0             |
| (U) In-House Support   |  |         | 1,762   | 1,934         |
| (U) SAASM development  |  |         | 1,504   | 3,685         |
| (U) SAASM M-Code development   |  |         | 4,294   | 4,500         |
| (U) Navwar Evaluation Team (NET)   |  |         | 0       | 0             |
| (U) NAVWAR modeling & simulation   |  |         | 106     | 0             |
| (U) Classified Requirement   |  |         | 365     | 0             |
| (U) GPS Modernization/Stewardship  |  |         | 0       | 11,000        |
| (U) GRAM-SAASM development   |  |         | 707     | 0             |
| (U) DAGR study effort  |  |         | 15,158  | 6,100         |
| (U) Advanced UE technology efforts   |  |         | 239     | 0             |
| (U) Advanced UE technology efforts (Receivers)                               |  |         | 4,701   | 0             |
| (U) Advanced UE technology efforts (Anti-Jam Filters)                        |  |         | 0       | 6,500         |
| (U) Advanced UE technology efforts (Advanced Antenna)                        |  |         | 0       | 2,950         |
| (U) Total  |  |         | 36,944  | 3,269         |
| (U) B. Budget Acquisition History and Planning Information (\$ in Thousands) |  |         |         | 49,244        |
| (U) Performing Organizations:  |  |         |         |               |
|  |  |         |         | 7,054         |
|  |  |         |         | 2,000         |
|  |  |         |         | 2,050         |
|  |  |         |         | 66,975        |

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Exhibit R-3 (PE 0305164F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                |                          |                         |                    |                        |                |                |                |                    | DATE   | February 2000 |
|--|--------------------------------|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|--------------------|--|---------------|
| BUDGET ACTIVITY                                    |                                |                          |                         |                    |                        |                |                |                |                    | PROJECT  |               |
| 07 - Operational System Development                |                                |                          |                         |                    |                        |                |                |                |                    | 0305164F NAVSTAR Global Positioning System (User 673028) |               |
| (U) Performing Organizations Continued:            |                                |                          |                         |                    |                        |                |                |                |                    | (EQ) Space)  |               |
| Contractor or Government Performing Activity       | Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program  |               |
| OSD Withhold for Inflation Savings                 |                                |                          | 19,293                  | 19,293             | 19,293                 | 0              | 0              | 0              | 0                  | 46   | 46            |
| Product Development Organizations                  |                                |                          |                         |                    |                        |                |                |                |                    |  |               |
| Rockwell (MAGR)                                    | C/FPIF/FFP/CPAF                | Various                  | 19,293                  | 19,293             | 19,293                 | 0              | 0              | 0              | 0                  | 19,293   | 19,293        |
| DOE Sandia (SAASM)                                 | MIPR                           | Feb 94                   | Continuing              | Continuing         | 7,982                  | 2,605          | 3,400          | 4,500          | Continuing         | TBD  | TBD           |
| NAWC (SAASM)                                       | MIPR                           | Oct 95                   | 760                     | 760                | 599                    | 0              | 0              | 0              | 0                  | 599  | 599           |
| Various (SAASM)                                    | Various                        | Various                  | Continuing              | Continuing         | 4,041                  | 1,539          | 1,100          | 8,600          | Continuing         | TBD  | TBD           |
| TBD (SAASM M-Code)                                 | TBD                            | Dec 00                   | Continuing              | Continuing         | 0                      | 0              | 0              | 8,000          | Continuing         | 8,000  | 8,000         |
| Alliant Techsys Inc (SAASM)                        | C/CPFF                         | Oct 95                   | 4,782                   | 4,782              | 4,632                  | 150            | 0              | 0              | 0                  | 4,782  | 4,782         |
| Multiple (NAVWAR PRDAs)C/CPAF                      |                                | Aug 96                   | 13,440                  | 13,440             | 13,440                 | 0              | 0              | 0              | 0                  | 13,440   | 13,440        |
| Holloman AFB (Integration) Project Order           | N/A                            |                          | Continuing              | Continuing         | 2,549                  | 731            | 736            | 659            | Continuing         | TBD  | TBD           |
| General Dynamics (Various) Time and Materials      |                                | Jan 96                   | 1,810                   | 1,810              | 1,810                  | 0              | 0              | 0              | 0                  | 1,810  | 1,810         |
| Various (ACTD Prevention)                          | Various                        | Various                  | 8,545                   | 8,545              | 6,265                  | 1,163          | 0              | 0              | 0                  | 7,428  | 7,428         |
| Various (ACTD Protection)                          | Various                        | Various                  | 14,071                  | 14,071             | 7,443                  | 2,890          | 3,500          | 0              | 0                  | 13,833   | 13,833        |
| Adv UE Protection Dev                              | Various                        | Various                  | TBD                     | TBD                | 0                      | 0              | 0              | 18,000         | 0                  | 18,000   | 18,000        |
| Various (NET)                                      | Various                        | Various                  | 10,413                  | 10,413             | 10,228                 | 106            | 0              | 0              | 0                  | 10,334   | 10,334        |
| Various (Classified Requirement)                   | Various                        | Various                  | Continuing              | Continuing         | 7,752                  | 0              | 11,000         | 8,000          | Continuing         | TBD  | TBD           |
| Various (GPS Modernization)                        | Various                        | Various                  | TBD                     | TBD                | 5,078                  | 707            | 0              | 0              | 0                  | 5,785  | 5,785         |
| Various (Navwar M&S)                               | Various                        | Various                  | 4,775                   | 4,775              | 3,210                  | 365            | 0              | 0              | 0                  | 3,575  | 3,575         |
| CeCom (DAGR study)                                 | MIPR                           | Dec 97                   | 385                     | 385                | 146                    | 239            | 0              | 0              | 0                  | 385  | 385           |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                    |  |            |                           | DATE    | February 2000 |
|--|--------------------|--|------------|---------------------------|---------|---------------|
| BUDGET ACTIVITY                                    |                    | PE NUMBER AND TITLE  |            |                           | PROJECT |               |
| 07 - Operational System Development                |                    | 0305164F NAVSTAR Global Positioning System (User 673028 EQ) Space) |            |                           | PROJECT |               |
| (U) Performing Organizations Continued:            |                    |  |            |                           |         |               |
| Product Development Organizations                  |                    |  |            |                           |         |               |
| TBD (Handheld PRDA)                                | TBD                | Apr 00   | TBD        | 0                         | 4,900   | TBD           |
| Various (GRAASM)                                   | PRDA               | Jul 98   | 23,659     | 6,001                     | 0       | 27,259        |
| Support and Management Organizations               |                    |  |            |                           |         |               |
| Overlook Sys (OASD/C3I)                            | C/CPFF             | Dec 95   | Continuing | 15,266                    | 1,934   | TBD           |
| Aerospace Corp (Technical Supt)                    | CPFF               | Various  | Continuing | 928                       | 2,112   | TBD           |
| SMC/FMB  | Various            | Various  | Continuing | 4,584                     | 668     | TBD           |
| (Shared Prg Cost)                                  |                    |  |            |                           |         |               |
| PRC (Technical Supt)                               | Time and Materials | Dec 95   | 714        | 714                       | 0       | 714           |
| Miscellaneous                                      | Various            | Various  | Continuing | 3,025                     | 972     | TBD           |
| (In-house support)                                 |                    |  |            |                           |         |               |
| Advanced UE Tech Invest                            | Various            | Various  | 4,655      | 0                         | 0       | 4,655         |
| (Tech Supt)  |                    |  |            |                           |         |               |
| Receiver Tech (Tech Spt)                           | Various            | Various  | Continuing | 0                         | 2,154   | TBD           |
| Anti-jam Filter Tech (Tech Spt)                    | Various            | Various  | Continuing | 0                         | 2,000   | TBD           |
| Advanced Antenna (Tech Spt)                        | Various            | Various  | Continuing | 0                         | 2,050   | TBD           |
| Various  | Various            | Various  | 2,375      | 2,375                     | 0       | 2,375         |
| (Other Navwar Studies)                             |                    |  |            |                           |         |               |
| Test and Evaluation Organizations                  |                    |  |            |                           |         |               |
| 46th TG (SAASM/Test)                               | Project Order      | Various  | 31,987     | 31,987                    | 0       | 31,987        |
| 46th TG  | Project Order      | Various  | Continuing | 1,469                     | 2,300   | TBD           |
| (UE develop & product testing)                     |                    |  |            |                           |         |               |
| Project 673028                                     |                    | Page 8 of 9 Pages  |            | Exhibit R-3 (PE 0305164F) |         |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |  |          | DATE    | February 2000 |
|--|-------------|--|----------|---------|---------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE                                      |          | PROJECT |               |
| 07 - Operational System Development                |             | 0305164F NAVSTAR Global Positioning System (User 673028) |          |         |               |
| (U) Government Furnished Property:                 |             | (EQ) Space)  |          |         |               |
| Item   | Method/Type | Award or   | Delivery |         |               |
| Description  | or Funding  | Obligation   | Date     |         |               |
| Product Development Property                       | Vehicle     | Date   |          |         |               |
| N/A  |             |  |          |         |               |
| Support and Management Property                    |             |  |          |         |               |
| N/A  |             |  |          |         |               |
| Test and Evaluation Property                       |             |  |          |         |               |
| N/A  |             |  |          |         |               |
| Subtotals  |             |  |          |         |               |
| Subtotal Product Development                       |             |  |          |         |               |
| Subtotal Support and Management                    |             |  |          |         |               |
| Subtotal Test and Evaluation                       |             |  |          |         |               |
| Total Project                                      |             |  |          |         |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |  |                  |                  |                  |                  |                  |                  |                  | DATE                      | February 2000 |
|---|--|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT                   |               |
| 07 - Operational System Development                 |  | 0305165F NAVSTAR GPS (Space)   |                  |                  |                  |                  |                  |                  |                  | 673030                    |               |
|   | COST (\$ in Thousands)   | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                |               |
| 673030  | NAVSTAR GPS (Space & Control)  | 101,587  | 107,451          | 250,197          | 209,114          | 181,291          | 132,711          | 101,958          | Continuing       | TBD                       |               |
|   | Quantity of RDT&E Articles   | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                         |               |
| (U)   | <b>A. Mission Description</b>  |  |                  |                  |                  |                  |                  |                  |                  |                           |               |
|   | *Note: FY99 efforts funded in PE 64480F are described in this R-2 exhibit for program clarity.   |  |                  |                  |                  |                  |                  |                  |                  |                           |               |
|   | This program element funds Research and Development for the NAVSTAR Global Positioning System (GPS) Space and Control segments of the overall GPS program. This includes: satellite development, procurement, and deployment; training simulators; Mission Operation Support Center (MOSC); and ground control segment operation, including sustaining engineering, space and ground segments upgrades, and R&D efforts to support the entire GPS system deployment.   |  |                  |                  |                  |                  |                  |                  |                  |                           |               |
|   | The program has been restructured since the FY00 PB submission. Block IIF satellites 7 through 9 procurement was delayed by two years (FY01 to FY03) due to extended mean mission duration of Block IIA satellites currently on orbit. This PE also funds Modernization which includes adding new civil and military capabilities to 12 Block IIR and the first 6 Block IIF satellites. Block IIR modernization includes adding a second civil signal and a new military signal to the last 12 satellites. The first six Block IIF satellites will already include the second civil signal. They will be modernized to include a third civil signal (LS) and the new military signal. Starting with Block IIF, satellite vehicle 7, a higher power spot-beam antenna will be added to provide enhanced anti-jam capability. This budget request assumes a \$67.5M FY00 reprogramming action (\$18M procurement/\$45.5M RDT&E). |  |                  |                  |                  |                  |                  |                  |                  |                           |               |
|   | Funding for the civil portion of GPS Modernization (beginning in 2001) was previously included in the Department of Transportation budget request.   |  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | FY 1999 (\$ in Thousands)  |  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$771  | Continued system engineering, including Joint Spectrum Center (JSC) support and GPS Engineering Management (GEM) System development  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$2,545  | Continued training simulator development   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$11,878   | Completed Operational Control Segment (OCS) Consolidated Contract for Common Operator Support Environment (COSE), Block IIR Full Functionality, and continued OCS Architectural Implementation |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$3,004  | OCS Transition to Operations Accomplished  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$346  | Continued space long-range planning and analysis (PE 64480F and PE 35165F)   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$999  | Continued GPS IIA/IIF/IIR Integrated Mission Operation Support Center (IMOSC) development  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)   | \$11,064   | Continued GPS IIF direct inject (PE 64480F and PE 35165F)  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| Project 673030                                      |  | Page 1 of 7 Pages  |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2 (PE 0305165F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                           | DATE                 | PROJECT       |
|---|---|---------------------------|----------------------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE   |                           |                      |               |
| <b>07 - Operational System Development</b>          | <b>0305165F NAVSTAR GPS (Space)</b>   |                           | <b>February 2000</b> | <b>673030</b> |
| (U) <b>A. Mission Description Continued</b>         |   |                           |                      |               |
| (U) <b>FY 1999 (\$ in Thousands) Continued</b>      |   |                           |                      |               |
| (U) \$303   | Continued GPS program support (PE 64480F and PE 35165F)   |                           |                      |               |
| (U) \$23,000  | Continued IIF satellite development (PE 64480F)   |                           |                      |               |
| (U) \$2,838   | Continued IIF satellite associated development including launch vehicle integration, award fees, and integration studies and services (PE 64480F)   |                           |                      |               |
| (U) \$3,390   | Continued clock technology development (PE 64480F)  |                           |                      |               |
| (U) \$29,008  | Continued IIF OCS development (PE 64480F)   |                           |                      |               |
| (U) \$2,791   | Continued IIF OCS associated development including Selective Availability Anti-Spoofing Module (SAASM) control segment (CS) changes, IIF system simulator development and studies (PE 64480F) |                           |                      |               |
| (U) \$3,200   | Continued GPS Modernization Space/Control development and technical support (PE 64480F)   |                           |                      |               |
| (U) \$6,450   | Continued GPS Modernization technical support (PE 64480F)   |                           |                      |               |
| (U) \$101,587                                       | Total   |                           |                      |               |
| (U) <b>FY 2000 (\$ in Thousands)</b>                |   |                           |                      |               |
| (U) \$1,103   | Continue system engineering, including JSC support and GEM System development   |                           |                      |               |
| (U) \$1,685   | Continue Control Segment training simulator development   |                           |                      |               |
| (U) \$12,917  | Continue development of OCS Architectural Implementation  |                           |                      |               |
| (U) \$300   | Complete space long-range planning and analysis   |                           |                      |               |
| (U) \$1,099   | Continue IIA/IIF/IIR IMOSC development  |                           |                      |               |
| (U) \$3,444   | Complete IIF satellite development  |                           |                      |               |
| (U) \$5,390   | Continue IIF clock technology development   |                           |                      |               |
| (U) \$2,700   | Begin IIF Space Vehicle (SV) compatibility analysis   |                           |                      |               |
| (U) \$1,882   | Continue IIF satellite associated development including launch vehicle integration, award fees, and integration studies and services  |                           |                      |               |
| (U) \$2,250   | Complete IIF direct inject  |                           |                      |               |
| (U) \$38,823  | Continue IIF OCS development  |                           |                      |               |
| (U) \$4,083   | Continue IIF OCS associated development including SAASM CS changes and IIF system simulator development   |                           |                      |               |
| (U) \$26,388  | Continue GPS Modernization Space/Control development  |                           |                      |               |
| (U) \$5,052   | Continue GPS Modernization technical support  |                           |                      |               |
| (U) \$335   | Continue GPS program support  |                           |                      |               |
| (U) \$107,451                                       | Total   |                           |                      |               |
| Project 673030                                      |   | Page 2 of 7 Pages         |                      |               |
|   |   | Exhibit R-2 (PE 0305165F) |                      |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)    |  | DATE           | February 2000  |
|--|--|----------------|----------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  | PROJECT        |                |
| 07 - Operational System Development                    | 0305165F NAVSTAR GPS (Space)   | 673030         |                |
| (U) <u>A. Mission Description Continued</u>            |  |                |                |
| (U) <u>FY 2001 (\$ in Thousands)</u>                   |  |                |                |
| (U) \$1,100  | Continue system engineering, including JSC support and GEM System development  |                |                |
| (U) \$1,731  | Continue CS training simulator development   |                |                |
| (U) \$3,707  | Complete development of OCS Architectural Implementation   |                |                |
| (U) \$2,820  | Continue IIA/IIF/IIR IMOSC development   |                |                |
| (U) \$4,650  | Continue IIF clock technology development  |                |                |
| (U) \$2,347  | Continue IIF SV compatibility analysis   |                |                |
| (U) \$4,454  | Continue IIF satellite associated development including launch vehicle integration, award fees, and integration studies and services |                |                |
| (U) \$42,972   | Continue IIF OCS development   |                |                |
| (U) \$1,615  | Continue IIF OCS associated development including SAASM CS changes and IIF system simulator development                              |                |                |
| (U) \$4,900  | Begin GPS Launch/Early Orbit (L/EO) consolidation  |                |                |
| (U) \$168,400  | Continue GPS Modernization Space/Control development (for all IIF and 12 IIR satellites)   |                |                |
| (U) \$10,750   | Continue GPS Modernization technical support   |                |                |
| (U) \$751  | Continue GPS program support   |                |                |
| (U) \$250,197  | Total  |                |                |
| (U) <u>B. Budget Activity Justification</u>            |  |                |                |
|  | This program is in Budget Activity 7 - Operational Systems Development because it is a post-Milestone III program.                   |                |                |
| (U) <u>C. Program Change Summary (\$ in Thousands)</u> |  |                |                |
| (U) Previous President's Budget (FY 2000 PBR)          |  | <u>FY 2000</u> | <u>FY 2001</u> |
| (U) Appropriated Value                                 |  | 94,404         | 108,851        |
| (U) Adjustments to Appropriated Value                  |  | 94,746         | 108,890        |
| a. Congressional/General Reductions                    |  | -342           | -1             |
| b. Small Business Innovative Research                  |  | -3,134         | -590           |
| c. Omnibus or Other Above Threshold Reprogram          |  | 10,885         |                |
| d. Below Threshold Reprogram                           |  | -568           | -848           |
| e. Rescissions   |  |                |                |
| f. Other   |  |                |                |
|  |  |                | TBD            |
|  |  |                | TBD            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |  |         |          |          |          |          |          |                           |               |
|--|--|---------|----------|----------|----------|----------|----------|---------------------------|---------------|
| BUDGET ACTIVITY  |  |         |          |          |          |          |          | DATE                      | February 2000 |
| 07 - Operational System Development  |  |         |          |          |          |          |          | PROJECT                   | 673030        |
| 0305165F NAVSTAR GPS (Space)   |  |         |          |          |          |          |          |                           |               |
| D. Other Program Funding Summary (\$ in Thousands)   |  |         |          |          |          |          |          |                           |               |
|  |  | FY 1999 | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005                   | Total Cost    |
|  |  | Actual  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate                  | Complete      |
| (U) PE 0305164F, GPS User Equipment  |  |         |          |          |          |          |          |                           |               |
| (U) PE 0101221N, Fleet Ballistic Missile System  |  |         |          |          |          |          |          |                           |               |
| (U) PE 0301357F and 0305913F, Nuclear Detonation Detection System (NDS)  |  |         |          |          |          |          |          |                           |               |
| (U) PE 0305119F Space Boosters (Delta II)  |  |         |          |          |          |          |          |                           |               |
| (U) PE 0604480F, GPS Block IIF   |  |         |          |          |          |          |          |                           |               |
| E. Acquisition Strategy  |  |         |          |          |          |          |          |                           |               |
| (U) GPS OCS upgrade was competitively awarded to a single contractor (Lockheed Martin) in July 1995. Block IIF satellite and IIF ground systems development contract was competitively awarded to a single contractor (Boeing) in April 1996. The Single Prime Initiative (SPI) consolidates these efforts into one contract that was awarded to Boeing (with Lockheed Martin as a subcontractor) on 1 Oct 99. |  |         |          |          |          |          |          |                           |               |
| F. Schedule Profile  |  |         |          |          |          |          |          |                           |               |
| (U) Continue OCS Architectural Implementation  |  |         |          |          |          |          |          |                           |               |
| (U) Phase 3/4 delivery   |  |         |          |          |          |          |          |                           |               |
| (U) IIA IMOSC system available   |  |         |          |          |          |          |          |                           |               |
| (U) IIA IMOSC development complete   |  |         |          |          |          |          |          |                           |               |
| (U) IIF IMOSC development begins   |  |         |          |          |          |          |          |                           |               |
| (U) IIF satellite final design verification  |  |         |          |          |          |          |          |                           |               |
| (U) GPS Modernization studies complete   |  |         |          |          |          |          |          |                           |               |
| (U) Master Control Station interface to IIR Operational Support System   |  |         |          |          |          |          |          |                           |               |
| (U) dev  |  |         |          |          |          |          |          |                           |               |
| (U) GPS Overarching Integrated Product Team (OIPT)   |  |         |          |          |          |          |          |                           |               |
| (U) GPS Operational Requirements Document (ORD) Validation   |  |         |          |          |          |          |          |                           |               |
| (U) GPS Program Review   |  |         |          |          |          |          |          |                           |               |
| (U) GPS Modernization Space/Control development begins   |  |         |          |          |          |          |          |                           |               |
| (U) GPS Modernization Long Lead Production begins  |  |         |          |          |          |          |          |                           |               |
| Project 673030   |  |         |          |          |          |          |          | Exhibit R-2 (PE 0305165F) |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                                  |                                     |                     | DATE                   | February 2000  | PROJECT            |
|---|-------------------------------------|---------------------|------------------------|----------------|--------------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                 |                     |                        |                | 673030             |
| <b>07 - Operational System Development</b>  | <b>0305165F NAVSTAR GPS (Space)</b> |                     |                        |                |                    |
| (U) <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |                                     |                     |                        |                |                    |
|   |                                     | FY 1999             | FY 2000                | FY 2001        |                    |
| (U) System Engineering including JSC and GEMS                                       |                                     | 771                 | 1,103                  | 1,100          |                    |
| (U) CS Training Simulator Development   |                                     | 2,545               | 1,685                  | 1,731          |                    |
| (U) OCS Development/Sustainment   |                                     | 11,878              | 12,917                 | 3,707          |                    |
| (U) OCS Transition to Operations  |                                     | 3,004               | 0                      | 0              |                    |
| (U) Space long-range planning   |                                     | 346                 | 300                    | 0              |                    |
| (U) IIF direct inject   |                                     | 11,064              | 2,250                  | 0              |                    |
| (U) IIA/IIF/IIR IMOSC development   |                                     | 999                 | 1,099                  | 0              |                    |
| (U) IIF satellite development   |                                     | 23,000              | 3,444                  | 2,820          |                    |
| (U) IIF clock technology development  |                                     | 3,390               | 5,390                  | 0              |                    |
| (U) IIF SV compatibility analysis   |                                     | 0                   | 2,700                  | 2,347          |                    |
| (U) IIF satellite associated development  |                                     | 2,838               | 1,882                  | 4,454          |                    |
| (U) IIF Operational Control System development                                      |                                     | 29,008              | 38,823                 | 42,972         |                    |
| (U) IIF OCS associated development  |                                     | 2,791               | 4,083                  | 1,615          |                    |
| (U) GPS L/EO consolidation  |                                     | 0                   | 0                      | 4,900          |                    |
| (U) GPS Modernization Space/Control development                                     |                                     | 3,200               | 26,388                 | 168,400        |                    |
| (U) GPS Modernization Technical Support   |                                     | 6,450               | 5,052                  | 10,750         |                    |
| (U) GPS program support   |                                     | 303                 | 335                    | 751            |                    |
| (U) Total   |                                     | 101,587             | 107,451                | 250,197        |                    |
| (U) <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |                                     |                     |                        |                |                    |
| (U) <b>Performing Organizations:</b>  |                                     |                     |                        |                |                    |
| Contractor or Government  | Contract Method/Type                | Award or Obligation | Performing Activity    | Project Office |                    |
| Performing Activity   | or Funding Vehicle                  | Date                | EAC                    | EAC            |                    |
|   |                                     |                     | FY 1999                | FY 2000        | FY 2001            |
|   |                                     |                     | Total Prior to FY 1999 | Budget         | Budget to Complete |
|   |                                     |                     |                        |                | Total Program      |
| Project 673030  |                                     |                     |                        |                |                    |
| Page 6 of 7 Pages   |                                     |                     |                        |                |                    |
| Exhibit R-3 (PE 0305165F)   |                                     |                     |                        |                |                    |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                     |           |         |            |            |                        |                |                |                | DATE                         | PROJECT       |
|--|-------------------------------------|-----------|---------|------------|------------|------------------------|----------------|----------------|----------------|------------------------------|---------------|
| BUDGET ACTIVITY                                    |                                     |           |         |            |            |                        |                |                |                |                              | 673030        |
| 07 - Operational System Development                |                                     |           |         |            |            |                        |                |                |                | PE NUMBER AND TITLE          |               |
|  |                                     |           |         |            |            |                        |                |                |                | 0305165F NAVSTAR GPS (Space) |               |
| (U)  | Performing Organizations Continued: |           |         |            |            |                        |                |                |                |                              |               |
| Product Development Organizations                  |                                     |           |         |            |            |                        |                |                |                |                              |               |
|  | Lockheed-Martin                     | CPAF/FFP  | Jul 95  | 124,401    | 124,401    | 60,160                 | 17,141         | 0              | 0              | 0                            | 77,301        |
|  | Applied Research Labs               | MIPR      | Mar 97  | 2,766      | 2,766      | 2,366                  | 0              | 683            | 300            | 0                            | 3,349         |
|  | Boeing                              | FPAF/CPAF | Apr 96  | Continuing | Continuing | 128,104                | 72,650         | 36,664         | 92,435         | Continuing                   | TBD           |
|  | Boeing (SPI)                        | CPAF/CPFF | Oct 00  | Continuing | Continuing | 0                      | 0              | 57,924         | 109,295        | Continuing                   | TBD           |
|  | TBD IIR Modernization               | TBD       | TBD     | TBD        | TBD        | 0                      | 0              | 0              | 30,916         | 0                            | 30,916        |
|  | NRL                                 | MIPR      | Various | Continuing | Continuing | 1,250                  | 3,390          | 5,390          | 4,650          | 15,625                       | 30,305        |
|  | GPS Modernization Tech Spt          | Various   | Various | Continuing | Continuing | 2,208                  | 6,450          | 5,052          | 10,750         | Continuing                   | TBD           |
|  | Miscellaneous                       | Various   | Various |            |            | 1,131                  | 536            | 0              | 0              | Continuing                   | TBD           |
| Support and Management Organizations               |                                     |           |         |            |            |                        |                |                |                |                              |               |
|  | System Engineering                  | Various   | Various | N/A        | N/A        | 19,410                 | 771            | 1,103          | 1,100          | Continuing                   | TBD           |
|  | Program Support                     | Various   | Various | N/A        | N/A        | 6,890                  | 303            | 335            | 751            | Continuing                   | TBD           |
|  | Miscellaneous                       | Various   | Various | N/A        | N/A        | 805                    | 346            | 300            | 0              | 0                            | 1,451         |
| Test and Evaluation Organizations                  |                                     |           |         |            |            |                        |                |                |                |                              |               |
| Subtotals  |                                     |           |         |            |            |                        |                |                |                |                              |               |
|  | Subtotal Product Development        |           |         |            |            | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete           | Total Program |
|  | Subtotal Support and Management     |           |         |            |            | 195,219                | 100,167        | 105,713        | 248,346        | TBD                          | TBD           |
|  | Subtotal Test and Evaluation        |           |         |            |            | 27,105                 | 1,420          | 1,738          | 1,851          | TBD                          | TBD           |
|  | Total Project                       |           |         |            |            | 222,324                | 101,587        | 107,451        | 250,197        | TBD                          | TBD           |

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Exhibit R-3 (PE 0305165F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |  |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|--|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |  | 0305182F Spacelift Range System  |                  |                  |                  |                  |                  |                  |                  | 674137     |               |
|  | COST (\$ in Thousands)                     | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674137   | Range Standardization and Automation (RSA) | 27,594   | 50,989           | 53,654           | 52,306           | 55,511           | 57,147           | 49,984           | Continuing       | TBD        |               |
|  | Quantity of RDT&E Articles                 | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <b>(U) A. Mission Description</b>  |  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| The Eastern Range (ER) headquartered at Patrick AFB, FL and the Western Range (WR) headquartered at Vandenberg AFB, CA are the nation's Spacelift Ranges. They provide tracking, telemetry, communications, flight analysis, and other capabilities necessary to safely conduct Department of Defense, civil, and commercial spacelift operations; intercontinental and sea-launched ballistic missile operational test and evaluations (T&E); and aeronautical and guided weapons T&E. Many Range assets are outdated, unreliable, inefficient, and costly to operate and maintain. |  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| The Air Force is addressing range shortcomings through a phased modernization program. Funding identified in this document is for the modernization development efforts. Modernization is needed to meet documented requirements for a Spacelift Range System (SLRS) to support the evolving launch mission. The objectives are to improve operational flexibility, reliability, and supportability while reducing operations and maintenance costs.   |  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| Two of the three modernization phases will continue in FY01. First, the Range Standardization and Automation (RSA) Phase IIA program will continue to develop upgrades to the control and display, and communication segments. Second, the SLRS Contract (SLRSC) will continue to develop an integrated suite of automated instrumentation, to include items previously planned for a follow-on RSA contract. Following are details of the FY99-01 RDT&E program:  |  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | <b>FY 1999 (\$ in Thousands)</b>           |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$8,004                                    | Continued RSA Phase I: Completed integration of Centralized Telemetry Processing Subsystem (CTPS). Completed Cape Fiber Optic Network (CFON) installation. Continued RSA Phase I test and evaluation.  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$17,053                                   | Continued RSA Phase IIA: Continued integration and testing of planning and scheduling and weather product items for operational turnover. Continued development of communications network including network core. Continued development of interim flight safety product for ER. |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,537                                    | Began development of voice, video and data network modernization. Began development of Differential GPS (DGPS) metric tracking system.   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$27,594                                   | Provided program support for Systems Program Office.   |                  |                  |                  |                  |                  |                  |                  |            |               |
|  | Total                                      |  |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 674137

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Exhibit R-2 (PE 0305182F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   | DATE          | February 2000 |
|---|---|---------------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE   | PROJECT       |               |
| <b>07 - Operational System Development</b>          | <b>0305182F Spacelift Range System</b>  | <b>674137</b> |               |
| (U) <b>A. Mission Description Continued</b>         |   |               |               |
| (U) <b>FY 2000 (\$ in Thousands)</b>                |   |               |               |
| (U) \$1,768   | Complete RSA Phase I: Complete RSA Phase test and evaluation and turnover.  |               |               |
| (U) \$35,051  | Continue RSA Phase IIA: Continue integration and testing of planning and scheduling and weather product items for operational turnover. Continue development and begin testing of DGPS for metric tracking. Continue development and begin testing of voice, video and data network modernization. Continue development and begin testing of communication network including network core. Complete interim flight safety product for the ER. Begin development of final flight operation and analysis product for SLRS.              |               |               |
| (U) \$3,300   | Begin SLRSC. Assess AFSPC's down-range instrumentation requirements and commercial off-the-shelf (COTS) products available to satisfy these requirements. Begin related design efforts.   |               |               |
| (U) \$2,370   | Provide program support for Systems Program Office.   |               |               |
| (U) \$8,500   | Fund California spaceport authority study and design of universal spaceport at Vandenberg AFB per congressional direction.  |               |               |
| (U) \$50,989  | Total   |               |               |
| (U) <b>FY 2001 (\$ in Thousands)</b>                |   |               |               |
| (U) \$31,392  | Continue RSA Phase IIA: Continue development of the final flight operations and analysis system. Complete DGPS for metric tracking. Continue development and testing of communications network including network core. Continue development and testing of voice, video and data network modernization. Complete testing of planning and scheduling and weather product items. Begin development of range operations, digital telemetry (previously referred to as CTPS), and related efforts under the control and display segment.. |               |               |
| (U) \$19,562  | Continue SLRSC: Continue assessment of existing COTS solutions for applicability to down-range instrumentation requirements and related design efforts. Apply results of COTS assessments/design efforts to development of automated instrumentation for the SLRS, to include instrumentation previously planned for RSA program.   |               |               |
| (U) \$2,700   | Provide program support for Systems Program Office.   |               |               |
| (U) \$53,654  | Total   |               |               |
| (U) <b>B. Budget Activity Justification</b>         |   |               |               |
|   | These efforts are categorized as Budget Activity 7, Operational Systems Development, because they upgrade existing operational capabilities with new systems. Funding for RSA and SLRSC design and integration for both ER and WR is consolidated in this program element to support the integrated SLRS approach.  |               |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                                 |          | DATE                      | PROJECT    |          |          |          |            |            |
|---|---|---------------------------------|----------|---------------------------|------------|----------|----------|----------|------------|------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE             |          | February 2000             |            |          |          |          |            |            |
| 07 - Operational System Development                 |   | 0305182F Spacelift Range System |          | 674137                    |            |          |          |          |            |            |
| (U)   | C. Program Change Summary (\$ in Thousands)   |                                 |          |                           |            |          |          |          |            |            |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999                         | FY 2000  | FY 2001                   | Total Cost |          |          |          |            |            |
| (U)   | Appropriated Value  | 24,457                          | 43,186   | 49,130                    | TBD        |          |          |          |            |            |
| (U)   | Adjustments to Appropriated Value   | 24,578                          | 51,686   |                           |            |          |          |          |            |            |
|   | a. Congressional/General Reductions   | -121                            | -14      |                           |            |          |          |          |            |            |
|   | b. Small Business Innovative Research   | -801                            |          |                           |            |          |          |          |            |            |
|   | c. Omnibus or Other Above Threshold Reprogram   |                                 | -280     |                           |            |          |          |          |            |            |
|   | d. Below Threshold Reprogram  | 4,092                           |          |                           |            |          |          |          |            |            |
|   | e. Rescissions  | -154                            | -403     |                           |            |          |          |          |            |            |
|   | f. Other  |                                 |          |                           | TBD        |          |          |          |            |            |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |                                 |          | 4,524                     |            |          |          |          |            |            |
| (U)   | Current Budget Submit/FY 2001 PBR   | 27,594                          | 50,989   | 53,654                    | TBD        |          |          |          |            |            |
| (U)   | Significant Program Changes:  |                                 |          |                           |            |          |          |          |            |            |
|   | FY 1999: \$3,999 added to fund RSA Phase IIA execution shortfall; \$388 added to fund AFSPC Range Safety Study; and, \$295 deducted for higher AF priorities.   |                                 |          |                           |            |          |          |          |            |            |
|   | FY 2000: Congress appropriated additional \$8,500 for California universal spacecraft study/design for Vandenberg AFB; RSA Phase I extended into FY 2000 to complete test and transition activities, using funding available from revised estimate of other program costs.  |                                 |          |                           |            |          |          |          |            |            |
|   | FY 2001: \$5,000 transferred from OPAF to provide necessary RDT&E/OPAF mix. \$476 deducted for higher AF priorities.  |                                 |          |                           |            |          |          |          |            |            |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  |                                 |          |                           |            |          |          |          |            |            |
|   |   | FY 1999                         | FY 2000  | FY 2001                   | FY 2002    | FY 2003  | FY 2004  | FY 2005  | Cost to    | Total Cost |
|   |   | Actual                          | Estimate | Estimate                  | Estimate   | Estimate | Estimate | Estimate | Complete   |            |
| (U)   | OPAF, BA 03, P-66, Spacelift  | 91,340                          | 82,682   | 92,714                    | 145,209    | 135,403  | 146,268  | 164,479  | Continuing | TBD        |
|   | Range System Space*   |                                 |          |                           |            |          |          |          |            |            |
|   | * FY 2001 through FY 2004 amounts reflect reductions due to transfer of funding from OPAF to RDT&E to provide necessary RDT&E/OPAF mix.   |                                 |          |                           |            |          |          |          |            |            |
| (U)   | E. Acquisition Strategy   |                                 |          |                           |            |          |          |          |            |            |
|   | The RSA Phase I contract was competitively awarded in FY 1993 to connect major ER stations at Antigua and Ascension Islands and the ER operations control center via a satellite communications network; to standardize and centralize telemetry processing for the ER and WR; and to modernize and automate the Cape Canaveral communications network. It ends in FY 2000. |                                 |          |                           |            |          |          |          |            |            |
| Project 674137                                      |   | Page 3 of 7 Pages               |          | Exhibit R-2 (PE 0305182F) |            |          |          |          |            |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |  | DATE              | February 2000 |                           |  |      | PROJECT       |
|---|--|-------------------|---------------|---------------------------|--|------|---------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                    |                   |               |                           |  |      |               |
| <b>07 - Operational System Development</b>  | <b>0305182F Spacelift Range System</b> |                   |               |                           |  |      | <b>674137</b> |
| <b>(U) <u>E. Acquisition Strategy Continued</u></b>   |  |                   |               |                           |  |      |               |
| The RSA Phase IIA contract was competitively awarded in FY 1996 to provide an SLRS architecture and standardize and automate the ranges. It modernizes range safety, flight analysis, communications, range operations, planning and scheduling, and meteorological systems. It will end in FY 2006.                                |  |                   |               |                           |  |      |               |
| AFMC is competitively awarding the SLRSC in FY 2000 to consolidate remaining modernization efforts with systems integration and sustainment efforts under one contractor. The SLRSC will develop and procure automated down-range instrumentation originally planned for a follow-on RSA phase. The SLRSC will run through FY 2010. |  |                   |               |                           |  |      |               |
| <b>(U) <u>F. Schedule Profile</u></b>   |  |                   |               |                           |  |      |               |
| (U) RSA Phase I   |  |                   |               |                           |  |      |               |
| (U) - Centralized Telemetry Processing Subsystem Installation/Checkout  | *                                      |                   |               |                           |  |      |               |
| (U) - Cape Fiber Optic Network Installation   |  |                   |               |                           |  |      |               |
| (U) - System DT&E   | *                                      |                   |               |                           |  |      |               |
| (U) - Operational T&E   |  |                   |               |                           |  |      |               |
| (U) - System Turnover   |  |                   |               |                           |  |      |               |
| (U) RSA Phase IIA   |  |                   |               |                           |  |      |               |
| (U) - Early Scheduling Tool Set for Automated Ranges Test Phase   | *                                      |                   |               |                           |  |      |               |
| (U) - Planning and Scheduling ER Combined DT&E & IOT&E  |  |                   |               |                           |  |      |               |
| (U) - Planning and Scheduling WR Combined DT&E & IOT&E  |  |                   |               |                           |  |      |               |
| (U) - Weather ER DT&E/OT&E  |  |                   |               |                           |  |      |               |
| (U) - Weather WR DT&E/OT&E  |  |                   |               |                           |  |      |               |
| (U) - Network Timing ER & WR Qualification Testing Complete   |  |                   |               |                           |  |      |               |
| (U) - Network Core WR Qualification Testing complete  |  |                   |               |                           |  |      |               |
| (U) - Network Manager WR Qualification Testing Complete   |  |                   |               |                           |  |      |               |
| (U) - Differential GPS for Metric Tracking Complete   |  |                   |               |                           |  |      |               |
| (U) SLRS Contract   |  |                   |               |                           |  |      |               |
| (U) - Acquisition Strategy Panel  | *                                      |                   |               |                           |  |      |               |
| (U) - Contract Award  |  |                   |               |                           |  |      |               |
| (U) California Universal Spaceport Study  |  |                   |               |                           |  |      |               |
| Project 674137  |  | Page 4 of 7 Pages |               | Exhibit R-2 (PE 0305182F) |  | 1414 |               |

## UNCLASSIFIED

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                                 | DATE                      | February 2000 |         |
|---|---------------------------------|---------------------------|---------------|---------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE             | PROJECT                   |               |         |
| 07 - Operational System Development                 | 0305182F Spacelift Range System | 674137                    |               |         |
| (U) <u>F. Schedule Profile Continued</u>            |                                 |                           |               |         |
|   |                                 | FY 1999                   | FY 2000       | FY 2001 |
|   |                                 | 1 2 3 4 1                 | 2 3 4 1       | 2 3 4   |
|   |                                 |                           | X             |         |
| (U) - Contract Award                                |                                 |                           |               |         |
| * = completed event; X = planned event              |                                 |                           |               |         |
| Project 674137                                      |                                 | Exhibit R-2 (PE 0305182F) |               |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                                 |                        |                |                            |                            |
|--|--|---|--------------------------|-------------------------|---------------------------------|------------------------|----------------|----------------------------|----------------------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         | DATE                            |                        | PROJECT        |                            |                            |
| 07 - Operational System Development                |  |   |                          |                         | 0305182F Spacelift Range System |                        | February 2000  |                            |                            |
| PE NUMBER AND TITLE                                |  |   |                          |                         | 674137                          |                        |                |                            |                            |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                                 |                        |                |                            |                            |
| (U)  | RSA Phase I Contract   |   |                          |                         | FY 1999                         | FY 2000                | FY 2001        | FY 2001                    |                            |
| (U)  | RSA Phase IIA Contract   |   |                          |                         | 8,004                           | 1,768                  | 0              | 0                          |                            |
| (U)  | SLRS Contract  |   |                          |                         | 17,053                          | 35,051                 | 31,392         | 31,392                     |                            |
| (U)  | Program Support  |   |                          |                         | 0                               | 3,300                  | 19,562         | 19,562                     |                            |
| (U)  | California Universal Spaceport Study                                     |   |                          |                         | 2,537                           | 2,370                  | 2,700          | 2,700                      |                            |
| (U)  | Total  |   |                          |                         | 27,594                          | 50,989                 | 53,654         | 53,654                     |                            |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                                 |                        |                |                            |                            |
| (U)  | Performing Organizations:  |   |                          |                         |                                 |                        |                |                            |                            |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC              | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000             | Budget to FY 2001 Complete |
|  | Product Development Organizations  |   |                          |                         |                                 |                        |                |                            | Total Program              |
|  | Harris Corp (RSA Phase I)  | C/CPAF                                  | Jun 93                   | 93,859                  | 96,087                          | 86,315                 | 8,004          | 1,768                      | 0                          |
|  | Lockheed Martin (RSA Phase IIA)  | C/CPAF                                  | Nov 95                   | 153,222                 | 153,848                         | 60,292                 | 17,053         | 35,051                     | 31,392                     |
|  | TBD (SLRSC)  | TBD                                     | Mar 00                   | TBD                     | TBD                             | 0                      | 0              | 3,300                      | Continuing                 |
|  | Support and Management Organizations                                     |   |                          |                         |                                 |                        |                |                            | TBD                        |
|  | Mission Support  | Various                                 | Various                  | N/A                     | N/A                             | 11,357                 | 2,537          | 2,370                      | Continuing                 |
|  | Universal Spaceport Study  | MIPR                                    | Feb 00                   | N/A                     | N/A                             | 0                      | 0              | 8,500                      | 0                          |
|  | Test and Evaluation Organizations  |   |                          |                         |                                 |                        |                |                            | 8,500                      |
|  | N/A  |   |                          |                         |                                 |                        |                |                            |                            |
| (U)  | Government Furnished Property:   |   |                          |                         |                                 |                        |                |                            |                            |
|  | Contract   | Method/Type or Funding Vehicle          | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999          | Budget FY 1999         | Budget FY 2000 | Budget to FY 2001 Complete | Total Program              |
|  | Item Description   |   |                          |                         |                                 |                        |                |                            |                            |

Project 674137

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Exhibit R-3 (PE 0305182F)

Project 674137

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Exhibit R-3 (PE 0305182F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)  |                    |                   |                 |                    |                |                |                |                  |                | DATE                            | February 2000 |
|---|--------------------|-------------------|-----------------|--------------------|----------------|----------------|----------------|------------------|----------------|---------------------------------|---------------|
| BUDGET ACTIVITY   |                    |                   |                 |                    |                |                |                |                  |                | PE NUMBER AND TITLE             | PROJECT       |
| 07 - Operational System Development   |                    |                   |                 |                    |                |                |                |                  |                | 0305182F Spacelift Range System | 674137        |
| (U) <u>Government Furnished Property Continued:</u>   |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| <u>Contract</u>   |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| <u>Item</u>   | <u>Method/Type</u> | <u>Award or</u>   | <u>Delivery</u> | <u>Total Prior</u> | <u>Budget</u>  | <u>Budget</u>  | <u>Budget</u>  | <u>Budget to</u> | <u>Total</u>   |                                 |               |
| <u>Description</u>  | <u>or Funding</u>  | <u>Obligation</u> | <u>Date</u>     | <u>to FY 1999</u>  | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u>  | <u>Program</u> |                                 |               |
| <u>Vehicle</u>  | <u>Date</u>        |                   |                 |                    |                |                |                |                  |                |                                 |               |
| <u>Product Development Property</u>   |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| GFP determination is ongoing as work progresses on each RSA Phase IIA delivery increment. The current 1000+ item GFP list is too large to be included with this document. It is available upon request. |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| <u>Support and Management Property</u>  |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| N/A   |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| <u>Test and Evaluation Property</u>   |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| N/A   |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| <u>Subtotals</u>  |                    |                   |                 |                    |                |                |                |                  |                |                                 |               |
| Subtotal Product Development  |                    |                   |                 | <u>Total Prior</u> | <u>Budget</u>  | <u>Budget</u>  | <u>Budget</u>  | <u>Budget to</u> | <u>Total</u>   |                                 |               |
| Subtotal Support and Management   |                    |                   |                 | <u>to FY 1999</u>  | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u>  | <u>Program</u> |                                 |               |
| Subtotal Test and Evaluation  |                    |                   |                 | 146,607            | 25,057         | 40,119         | 50,954         | TBD              | TBD            |                                 |               |
| Total Project   |                    |                   |                 | 11,357             | 2,537          | 10,870         | 2,700          | TBD              | TBD            |                                 |               |
|   |                    |                   |                 | 157,964            | 27,594         | 50,989         | 53,654         | TBD              | TBD            |                                 |               |

Project 674137

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Exhibit R-3 (PE 0305182F)

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PE NUMBER: 0305202F  
PE TITLE: Dragon U-2 (JMIP)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                |                            |                  |                  |                  |                  |                  |                  |            | DATE       | February 2000 |
|---|----------------|----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|------------|---------------|
| BUDGET ACTIVITY   |                | PE NUMBER AND TITLE        |                  |                  |                  |                  |                  |                  |            |            |               |
| 07 - Operational System Development   |                | 0305202F Dragon U-2 (JMIP) |                  |                  |                  |                  |                  |                  |            |            |               |
| COST (\$ in Thousands)  | FY 1999 Actual | FY 2000 Estimate           | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |            |               |
| Total Program Element (PE) Cost   | 0              | 0                          | 27,546           | 24,118           | 8,224            | 1,936            | 1,931            | Continuing       | TBD        |            |               |
| 674818 Advanced Technology  | 0              | 0                          | 17,616           | 16,443           | 6,285            | 0                | 0                | 40,694           | TBD        |            |               |
| 674820 Manned Reconnaissance Systems U-2  | 0              | 0                          | 9,930            | 7,675            | 1,939            | 1,936            | 1,931            | Continuing       | TBD        |            |               |
| Quantity of RDT&E Articles  | 0              | 0                          | 0                | 0                | 0                | 0                | 0                | 0                | 0          |            |               |
| <b>(U) A. Mission Description</b><br>Manned Reconnaissance system U-2 funding for FY99 - FY00 in PE 0305207F. Advanced Technology funding for FY00 included in PE 0305206F (Only portion relates to this program )  |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| <b>(U) B. Budget Activity Justification</b><br>The RDT&E portion of this program element funds efforts required to enhance and sustain the U-2 Dragon reconnaissance aircraft. The RDT&E efforts in this PE focus on sensor and safety of flight projects. In addition to the RDT&E funding there are procurement funds associated with these developments. |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| <b>(U) C. Program Change Summary (\$ in Thousands)</b>  |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| (U) Previous President's Budget (FY 2000 PBR)   |                |                            | FY 1999          | 0                |                  | FY 2000          | 0                | FY 2001          | 0          | Total Cost |               |
| (U) Appropriated Value  |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| (U) Adjustments to Appropriated Value   |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| a. Congressional/General Reductions   |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| b. Small Business Innovative Research   |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| c. Omnibus or Other Above Threshold Reprogram   |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| d. Below Threshold Reprogram  |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |
| e. Rescissions  |                |                            |                  |                  |                  |                  |                  |                  |            |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                            | DATE    | February 2000 |
|---|--|----------------------------|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE        |         |               |
| 07 - Operational System Development                 |  | 0305202F Dragon U-2 (JMIP) |         |               |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued  | FY 1999                    | FY 2000 | FY 2001       |
|   | f. Other   |                            | 0       |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |                            |         | 27,546        |
| (U)   | Current Budget Submit/FY 2001 PBR  |                            | 0       | 27,546        |
| (U)   | Significant Program Changes:   |                            |         | TBD           |
|   | Funding for PE 35202 project 674820 was reprogrammed from PE 305207F (FY00PBR - \$14.525M).                |                            |         |               |
|   | Funding for PE 35202 project 674818 was reprogrammed from a portion of PE 0305206F (FY00 PBR - \$17.616M). |                            |         |               |
|   | FY01 - U-2 Electronic Warfare System (EWS) reprogramming from RDT&E to procurement ( \$4.595 M).           |                            |         |               |
| Total Cost  |  |                            |         |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                                  |                                       |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|----------------------------------|---------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                                  | PE NUMBER AND TITLE                   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                                  | 0305202F Dragon U-2 (JMIP)            |                  |                  |                  |                  |                  |                  |                  | 674818     |               |
| COST (\$ in Thousands)   |                                  | FY 1999 Actual                        | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674818   | Advanced Technology              | 0                                     | 0                | 17,616           | 16,443           | 6,285            | 0                | 0                | 40,694           | TBD        |               |
| Note: FY00 funding included in PE 0305206F ( Only U-2 Defensive Systems portion relates to this program )  |                                  |                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| <b>(U) A. Mission Description</b><br>This project supports the U-2 Advanced Defensive System (ADS) development. ADS is designed to provide situational awareness and self-protection jamming to degrade and or detect the ability of surface-to-air and air-to-air weapon systems to engage the U-2 aircraft. A full ADS capability will be achieved through spiral upgrades. Spiral upgrades will address modern RF signals in the baseline system. Follow-on upgrades will include infrared warning and defense. Onboard and offboard data fusion will be provided as a growth provision to enhance situational awareness. |                                  |                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)        |                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0                              | No Activity                           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0                              | Total                                 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)        |                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0                              | Funding included in PE 0305206F       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0                              | Total                                 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2001 (\$ in Thousands)        |                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$9,616                          | Defensive System Hardware Development |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$5,500                          | Software Development                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,000                          | SPO Support                           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,500                          | System Test                           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$17,616                         | Total                                 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | <b>B. Project Change Summary</b> |                                       |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |                            |          |          |          |          |          |          |                  | DATE       | February 2000 |
|--|---|----------------------------|----------|----------|----------|----------|----------|----------|------------------|------------|---------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE        |          |          |          |          |          |          |                  | PROJECT    |               |
| 07 - Operational System Development                  |   | 0305202F Dragon U-2 (JMIP) |          |          |          |          |          |          |                  | 674818     |               |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |                            |          |          |          |          |          |          |                  |            |               |
|  |   | FY 1999                    | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to Complete | Total Cost |               |
|  |   | Actual                     | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Continuing       |            |               |
| (U)  | ADS RDT&E PE 35206F   | 0                          | 8,600    | 0        | 0        | 0        | 0        | 0        | 0                | TBD        |               |
| (U)  | ADS Production (APAF 305202)  | 0                          | 0        | 1,561    | 1,522    | 3,895    | 4,042    | 4,121    | Continuing       | TBD        |               |
| (U)  | <b>D. Acquisition Strategy</b>  |                            |          |          |          |          |          |          |                  |            |               |
|  | Funds are for the engineering, manufacturing and development for the U-2 Advanced Defensive System (ADS). A sole source contract will be awarded to a prime contractor which will be responsible for delivering a total system. The prime contractor may subcontract for subsystems of the ADS. Efforts include the development of ADS, integration on the U-2 aircraft, testing and production planning. |                            |          |          |          |          |          |          |                  |            |               |
| (U)  | <b>E. Schedule Profile</b>  |                            |          |          |          |          |          |          |                  |            |               |
|  |   | FY 1999                    |          | FY 2000  |          | FY 2001  |          |          |                  |            |               |
|  |   | 1                          | 2        | 3        | 4        | 1        | 2        | 3        | 4                |            |               |
| (U)  | U-2 ADS Milestone 2   |                            |          |          |          |          |          |          |                  |            |               |
| (U)  | ADS Phase 2 Contract Award  |                            |          |          |          |          | X        |          |                  |            |               |
| (U)  | Begin ADS Flight Testing  |                            |          |          |          |          | X        |          |                  |            |               |
|  | Note: * denotes completed event, X denotes planned event.   |                            |          |          |          |          |          |          |                  |            |               |

Project 674818

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Exhibit R-2A (PE 0305202F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                            |                          |                     |                | DATE                   | PROJECT            |
|--|--|----------------------------|--------------------------|---------------------|----------------|------------------------|--------------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE        |                          |                     |                |                        |                    |
| 07 - Operational System Development                |  | 0305202F Dragon U-2 (JMIP) |                          |                     |                |                        | 674818             |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              | FY 1999                    | FY 2000                  | FY 2001             |                |                        |                    |
| (U)  | Hardware and Software Development  |                            |                          |                     |                |                        | 9,616              |
| (U)  | Systems Engineering  |                            |                          |                     |                |                        | 3,000              |
| (U)  | Contractor Engineering Support   |                            |                          |                     |                |                        | 2,500              |
| (U)  | Government Engineering Support   |                            |                          |                     |                |                        | 1,000              |
| (U)  | System Test  |                            |                          |                     |                |                        | 1,500              |
| (U)  | Total  |                            |                          |                     |                |                        | 17,616             |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |                            |                          |                     |                |                        |                    |
| (U)  | Performing Organizations:  |                            |                          |                     |                |                        |                    |
|  | Contractor or Government   | Method/Type                | Award or Obligation Date | Performing Activity | Project Office | Total Prior to FY 1999 | Budget FY 1999     |
|  | Performance Activity   | Vehicle                    |                          | EAC                 | EAC            |                        | Budget FY 2000     |
|  | Product Development Organizations  |                            |                          |                     |                |                        | Budget to Complete |
|  | Adv Def Sys Cont   | CPIF                       | 2nd Qtr 00               | TBD                 | TBD            |                        | 15,116 Continuing  |
|  | Support and Management Organizations                                     |                            |                          |                     |                |                        | 1,000 Continuing   |
|  | ASC/RA   |                            |                          |                     |                |                        | 1,500 Continuing   |
|  | Test and Evaluation Organizations  |                            |                          |                     |                |                        | Budget FY 2001     |
|  | Eglin AFB, Edwards AFB   |                            |                          |                     |                |                        | Budget to Complete |
|  | Subtotals  |                            |                          |                     |                | Total Prior to FY 1999 | Budget FY 2000     |
|  | Subtotal Product Development   |                            |                          |                     |                |                        | 15,116 TBD         |
|  | Subtotal Support and Management  |                            |                          |                     |                |                        | 1,000 TBD          |
|  | Subtotal Test and Evaluation   |                            |                          |                     |                |                        | 1,500 TBD          |
|  | Total Project  |                            |                          |                     |                |                        | 17,616 TBD         |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |                                   |  |                            |                  |                  |                  |                  |                  |                  | DATE             | February 2000 |
|--|-----------------------------------|--|----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------|
| BUDGET ACTIVITY                                      |                                   |  | PE NUMBER AND TITLE        |                  |                  |                  |                  |                  |                  | PROJECT          |               |
| 07 - Operational System Development                  |                                   |  | 0305202F Dragon U-2 (JMIP) |                  |                  |                  |                  |                  |                  | 674820           |               |
| COST (\$ in Thousands)                               |                                   |  | FY 1999 Actual             | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost    |
| 674820   | Manned Reconnaissance Systems U-2 |  | 0                          | 0                | 9,930            | 7,675            | 1,939            | 1,936            | 1,931            | Continuing       | TBD           |

Note: FY99 - FY00 funding included in PE 0305207F.

(U)

A. Mission Description

This development project supports high payoff improvements to the U-2 Advanced Synthetic Aperture Radar System (ASARS-2) through the ASARS-2 Improvement Program (AIP). AIP improves area search, precision geolocation, and image quality characteristics sufficiently to directly support the targeting of precision guided munitions (PGMs). Complex imagery will be produced by the AIP system and support significant exploitation products for the imagery analysts. AIP champions the introduction of Asynchronous Transfer Mode (ATM) datalink formats to the ISR community and supports National Imagery Transmission Format (NITF) standards. Several Line Replaceable Units (LRU) including the Process Control Unit (PCU), Receiver - Exciter (RE), and transmitter are approaching the end of their supportability life. Developing new LRUs with next generation technology will make ASARS-2 supportable through the expected service life of the U-2 and provide capability enhancements necessary to support PGMs. Improvements to the ASARS-2 are directly transferable to Global Hawk High Altitude Endurance Unmanned Aerial Vehicles (HAE UAV) should migration of this improvement become a requirement. Funding for evaluation and risk reduction of U-2 fuel conversion from JPTS to JP-8 are also contained in this program element.

(U)

FY 1999 (\$ in Thousands)

Funding included in PE 0305207F

Total

(U)

FY 2000 (\$ in Thousands)

Funding included in PE 0305207F

Total

(U)

FY 2001 (\$ in Thousands)

Continued Common Exploitation Tool Development (AIP)

Fuel Conversion

SPO Support (AIP and Fuel Conversion)

Continue Radar Transmitter Development (AIP)

Begin Radar Antenna Development (AIP)

Total

Project 674820

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Exhibit R-2A (PE 0305202F)

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## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |                            |          |          |          |          |          |          |            | DATE       | February 2000 |
|--|---|----------------------------|----------|----------|----------|----------|----------|----------|------------|------------|---------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE        |          |          |          |          |          |          |            | PROJECT    |               |
| 07 - Operational System Development                  |   | 0305202F Dragon U-2 (JMIP) |          |          |          |          |          |          |            | 674820     |               |
| (U)  | <b>B. Project Change Summary</b>  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |                            |          |          |          |          |          |          |            |            |               |
|  |   | FY 1999                    | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to    | Total Cost |               |
|  |   | Actual                     | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete   |            |               |
| (U)  | RDT&E PE 0305207F - AIP   | 47,795                     | 9,388    | 0        | 0        | 0        | 0        | 0        | Continuing | TBD        |               |
| (U)  | APAF, Manned Recce,   | 39,364                     | 15,312   | 0        | 0        | 0        | 0        | 0        | Continuing | TBD        |               |
| (U)  | 0305207F - AIP Production*  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | APAF, Manned Recce,   | 0                          | 0        | 12,777   | 18,659   | 15,380   | 6,066    | 4,016    | Continuing | TBD        |               |
|  | 0305202F - AIP Production   |                            |          |          |          |          |          |          |            |            |               |
|  | * First Upgrade Radar Transmitter Deliveries in 3QFY03  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | <b>D. Acquisition Strategy</b>  |                            |          |          |          |          |          |          |            |            |               |
|  | For airborne collection capability upgrades, modify existing platform and associated ground control equipment via Engineering Change Proposals (ECPs)/Task orders to existing USAF contracts. For ASARS-2, develop and test new technology line replaceable units (LRU's). There is associated procurement funding tied to this development activity. |                            |          |          |          |          |          |          |            |            |               |
| (U)  | <b>E. Schedule Profile</b>  |                            |          |          |          |          |          |          |            |            |               |
|  |   | FY 1999                    |          | FY 2000  |          | FY 2001  |          |          |            |            |               |
|  |   | 1                          | 2        | 3        | 4        | 1        | 2        | 3        | 4          |            |               |
| (U)  | ASARS-2 Improvement Program   |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -Begin Radar Transmitter Upgrade  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -Deliver Block 10 Software  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | Fuel Conversion   |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -Cold Flow Simulation (Cont)  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -High Altitude Cold Temp Model (Cont)   |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -Material Compatibility (Cont)  |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -Thermal Stability (Cont)   |                            |          |          |          |          |          |          |            |            |               |
| (U)  | -Engine Testing   |                            |          |          |          |          |          |          |            |            |               |
|  | Note: * denotes completed event, X denotes planned event.   |                            |          |          |          |          |          |          |            |            |               |

Project 674820

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Exhibit R-2A (PE 0305202F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |             |            |            |                            |  |               |  |  |
|--|--|-------------|------------|------------|----------------------------|--|---------------|--|--|
| BUDGET ACTIVITY                                    |  |             |            |            | DATE                       |  | PROJECT       |  |  |
| 07 - Operational System Development                |  |             |            |            | 0305202F Dragon U-2 (JMIP) |  | February 2000 |  |  |
| 07 - Operational System Development                |  |             |            |            | 0305202F Dragon U-2 (JMIP) |  | February 2000 |  |  |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |             |            |            |                            |  |               |  |  |
| (U)  | Primary Hardware Development   |             |            |            |                            |  |               |  |  |
| (U)  | Software Development   |             |            |            |                            |  |               |  |  |
| (U)  | Government Engineering Support   |             |            |            |                            |  |               |  |  |
| (U)  | System Testing   |             |            |            |                            |  |               |  |  |
| (U)  | Total  |             |            |            |                            |  |               |  |  |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |             |            |            |                            |  |               |  |  |
| (U)  | Performing Organizations:  |             |            |            |                            |  |               |  |  |
|  | Contractor or  | Contract    |            |            |                            |  |               |  |  |
|  | Government   | Method/Type | Award or   | Performing | Project                    |  |               |  |  |
|  | Performing   | or Funding  | Obligation | Activity   | Office                     |  |               |  |  |
|  | Activity   | Vehicle     | Date       | EAC        | EAC                        |  |               |  |  |
|  | Product Development Organizations  |             |            |            |                            |  |               |  |  |
|  | Raytheon (AIP)   | CPIF        | 3Q96       | N/A        | N/A                        |  |               |  |  |
|  | Support and Management Organizations                                     |             |            |            |                            |  |               |  |  |
|  | ASC/RA   |             |            |            |                            |  |               |  |  |
|  | Test and Evaluation Organizations  |             |            |            |                            |  |               |  |  |
|  | Edwards, AFB   |             |            |            |                            |  |               |  |  |
|  | Subtotals  |             |            |            |                            |  |               |  |  |
|  | Subtotal Product Development   |             |            |            |                            |  |               |  |  |
|  | Subtotal Support and Management  |             |            |            |                            |  |               |  |  |
|  | Subtotal Test and Evaluation   |             |            |            |                            |  |               |  |  |
|  | Total Project  |             |            |            |                            |  |               |  |  |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                       |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|-----------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                       | PE NUMBER AND TITLE                         |                  |                  |                  |                  |                  |                  |                  |            |               |
| 07 - Operational System Development  |                       | 0305205F Endurance Unmanned Aerial Vehicles |                  |                  |                  |                  |                  |                  |                  |            |               |
| COST (\$ in Thousands)   |                       | FY 1999 Actual                              | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| Total Program Element (PE) Cost  |                       | 183,017                                     | 77,866           | 109,215          | 70,106           | 48,467           | 49,465           | 50,559           | Continuing       | TBD        |               |
| 674755   | Predator              | 4,261                                       | 3,907            | 3,696            | 3,773            | 3,839            | 3,917            | 3,994            | Continuing       | TBD        |               |
| 674799   | Global Hawk           | 97,493                                      | 73,959           | 103,219          | 66,333           | 44,628           | 45,548           | 46,565           | Continuing       | TBD        |               |
| 674815   | DarkStar*             | 33,715                                      | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 53,783     |               |
| 674816   | Common Ground Segment | 47,548                                      | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 47,548     |               |
| 674883   | JTC/SIL MUSE          | 0   | 0                | 2,300            | 0                | 0                | 0                | 0                | 0                | TBD        |               |
| Quantity of RDT&E Articles   |                       | 0   | 0                | 2                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| Note: The DarkStar portion of the HAE UAV ACTD was canceled on 29 Jan 99. Request for reprogramming of DarkStar funds to Global Hawk and Common Ground Segment (DD1415-1 dated 24 Aug 99, DOD Ser. No. FY99-013 PA) was approved by Congress on 23 Dec 99. DarkStar and CGS funding lines have been transferred to the Global Hawk System program. The DarkStar and CGS funding lines will be deleted.   |                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U) <u>A. Mission Description</u><br>Endurance Unmanned Aerial Vehicles (UAVs) are a family of unmanned vehicles developed under two separate Advanced Concept Technology Demonstrations (ACTD). They will provide all-weather, day/night, reconnaissance and surveillance in direct support of the Joint Forces Commander and integrate with existing airborne reconnaissance architectures for mission planning, data processing, exploitation and dissemination. The RQ-1A Predator UAV is a medium altitude endurance (MAE) UAV which completed its ACTD in FY96. The RQ-4A Global Hawk is a high altitude endurance (HAE) UAV. The Global Hawk, along with its associated ground station, the Common Ground Segment, is currently scheduled to complete its ACTD phase in June 00. The program will then transition to a 'normal' acquisition program in EMD. |                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U) <u>B. Budget Activity Justification</u><br>This program is budget activity 7, Operational Systems Development, because it involves Air Force R&D to field a viable system and develop additional operational capabilities.   |                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| Exhibit R-2 (PE 0305205F)  |                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |  | DATE    | February 2000 |
|---|---|--|---------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                                |         |               |
| <b>07 - Operational System Development</b>          |   | <b>0305205F Endurance Unmanned Aerial Vehicles</b> |         |               |
| (U)   | <u>C. Program Change Summary (\$ in Thousands)</u>  |  |         |               |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999  | FY 2000 | FY 2001       |
| (U)   | Appropriated Value  | 188,423  | 70,835  | 26,788        |
| (U)   | Adjustments to Appropriated Value   | 188,957  | 79,800  |               |
|   | a. Congressional/General Reductions   | -534   |         |               |
|   | b. Small Business Innovative Research   |  |         |               |
|   | c. Omnibus or Other Above Threshold Reprogram   | -428   |         |               |
|   | d. Below Threshold Reprogram  | -4,382   |         |               |
|   | e. Rescissions  | -1,024   | -1,506  |               |
|   | f. Other  |  |         |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |  |         | 82,427        |
| (U)   | Current Budget Submit/FY 2001 PBR   | 183,017  | 77,866  | 109,215       |
| (U)   | <u>Significant Program Changes:</u>   |  |         |               |
|   | (1) FY99 below threshold reprogramming transferred funds to higher Air Force priorities.                          |  |         |               |
|   | (2) FY01 adjustment will fund Global Hawk engineering and manufacturing development (EMD) and operationalization. |  |         |               |
|   |   |  |         | TBD           |
|   |   |  |         | TBD           |
|   |   |  |         | TBD           |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |          |   |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|--|----------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY  |          | PE NUMBER AND TITLE                         |                  |                  |                  |                  |                  |                  |                  | PROJECT                    |               |
| 07 - Operational System Development  |          | 0305205F Endurance Unmanned Aerial Vehicles |                  |                  |                  |                  |                  |                  |                  | 674755                     |               |
| COST (\$ in Thousands)   |          | FY 1999 Actual                              | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| 674755   | Predator | 4,261                                       | 3,907            | 3,696            | 3,773            | 3,839            | 3,917            | 3,994            | Continuing       | TBD                        |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The Predator unmanned aerial vehicle (UAV) is a medium altitude endurance UAV capable of sustained (long dwell) surveillance of critical targets, under most weather conditions, at a range of 500 nm from the launch area. Twelve Predator systems are being procured (each system consists of four air vehicles, one ground control station, and one Predator primary satellite link). The Predator is equipped with Electro-Optical/Infrared (EO/IR) and Synthetic Aperture Radar (SAR) sensors. Predator also incorporates line-of-sight(LOS), narrow-band UHF SATCOM and wide-band Ku-band SATCOM datalinks capable of providing near-real-time (NRT) transmission of high resolution imagery throughout the operational envelope. The system supports the theater commander and interfaces with the Command, Control, Communication, Computer and Intelligence (C4I) architecture. The first five Predator systems were procured either from an Advanced Concept Technology Demonstration or in an interim configuration. Beginning with the sixth system, Predators will be in a Baseline configuration, with upgrades including de-icing, UHF/VHF voice relay, and IPF Mode IV. IR sensor improvements, growth payloads, work station upgrades and reliability and maintainability improvements are being considered as part of Block I. UAV Common Automatic Recovery System (UCARS) has been added by Congress. As a result of a combat mission need statement (C-MNS) generated during ALLIED FORCE operations in Kosovo, one Predator system was outfitted with a temporary laser designator for use with precision guided munitions. Congress added production funds in FY00 for a permanent laser designator capability, tactical common data link (TCDL) and dual channel communications, and directed compliance with Tactical Control System standards; all will be added to Block I improvements.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u></p> <p>(U) \$630 Preparation for operational test and evaluation (OT&amp;E)</p> <p>(U) \$904 Block I improvements (dual channel communications, Ku SATCOM tunability, Air Force Mission Support System (AFMSS) integration)</p> <p>(U) \$290 Rectified identified air vehicle and ground station deficiencies to improve R&amp;M</p> <p>(U) \$1,763 Integrated UAV Common Automatic Recovery System (UCARS)</p> <p>(U) \$674 Integrated temporary laser designator in response to C-MNS</p> <p>(U) \$4,261 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u></p> <p>(U) \$800 Conduct OT&amp;E/developmental testing of Block I improvements</p> <p>(U) \$2,750 Block I improvements ( IR sensor improvements, growth payloads, work station upgrades, reliability and maintainability improvements)</p> <p>(U) \$357 Field support (increased level of support to prepare for formal OT&amp;E)</p> <p>(U) \$3,907 Total</p> |          |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Project 674755   |          | Page 3 of 25 Pages                          |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305205F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   | DATE     | February 2000 |
|--|---|----------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE   | PROJECT  |               |
| 07 - Operational System Development  | 0305205F Endurance Unmanned Aerial Vehicles                                   | 674755   |               |
| (U) <u>A. Mission Description Continued</u>  |   |          |               |
| (U) FY 2001 (\$ in Thousands)  |   |          |               |
| (U) \$200  | OT&E  |          |               |
| (U) \$200  | Conduct developmental testing for TCDL  |          |               |
| (U) \$2,750  | Complete TCDL integration   |          |               |
| (U) \$500  | Rectify identified air vehicle and ground station deficiencies to improve R&M |          |               |
| (U) \$46   | Field support   |          |               |
| (U) \$3,696  | Total   |          |               |
| (U) <u>B. Project Change Summary</u>   |   |          |               |
| Delay in OT&E required realignment of funds allocated for testing. TCDL integration accelerated to enable operations in Korea as soon as possible, as directed by Congress in FY00.  |   |          |               |
| (U) <u>C. Other Program Funding Summary (\$ in Thousands)</u>  |   |          |               |
|  | FY 1999   | FY 2000  | FY 2001       |
|  | Actual  | Estimate | Estimate      |
| (U) AF RDT&E   |   |          |               |
| (U) Other APPN   |   |          |               |
| (U) Aircraft Procurement, AF (PE 35205F), Predator   | 129,750   | 57,142   | 22,087        |
| (U) MILCON, AF (PE 27245F)   | 15,013  |          |               |
| (U) <u>D. Acquisition Strategy</u>   |   |          |               |
| Predator is in full scale production. Twelve systems plus attrition air vehicles are being acquired with the prime contractor, General Atomics Aeronautical Systems Inc. They also are assigned total system performance responsibility (TSPR). With the exceptions of the Tactical Endurance Synthetic Aperture Radar and the Ku-band Predator primary satellite link, which are being procured as GFE, all procurement of Predator systems will be through General Atomics. Program will transition from interim contractor logistics support (ICS) to contractor logistics support (CLS) in FY00. |   |          |               |
| (U) <u>E. Schedule Profile</u>   |   |          |               |
|  | FY 1999   | FY 2000  | FY 2001       |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |                                      |   |   |   |   | DATE                        | February 2000 |
|--|--------------------------------------|---|---|---|---|-----------------------------|---------------|
| BUDGET ACTIVITY                                      |                                      | PE NUMBER AND TITLE                         |   |   |   | PROJECT                     |               |
| 07 - Operational System Development                  |                                      | 0305205F Endurance Unmanned Aerial Vehicles |   |   |   | 674755                      |               |
| (U)  | <u>E. Schedule Profile Continued</u> |   |   |   |   |                             |               |
| (U)  | TEMP approval                        | FY 1999<br>1    2    3    *                 | 4 | 1 | 2 | FY 2000<br>3    2    3    4 | X             |
| (U)  | Delivery of first Baseline system    |   |   |   |   |                             |               |
| (U)  | OT&E                                 |   |   |   |   |                             |               |
| (U)  | Retrofit of ACTD Systems complete    |   |   |   |   |                             |               |
|  | * denotes completed event            |   |   |   |   |                             |               |
|  | X denotes planned event              |   |   |   |   |                             |               |

Project 674755
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Exhibit R-2A (PE 0305205F)

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |                    |                        |                |                    |                | DATE               | February 2000 |
|--|---|---|--------------------------|-------------------------|--------------------|------------------------|----------------|--------------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                         |                          |                         |                    |                        |                |                    |                | PROJECT            |               |
| 07 - Operational System Development                |   | 0305205F Endurance Unmanned Aerial Vehicles |                          |                         |                    |                        |                |                    |                | 674755             |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          |                         |                    |                        |                |                    |                |                    |               |
| (U)  | Hardware/Software   | FY 1999                                     | FY 2000                  | FY 2001                 |                    |                        |                |                    |                |                    | FY 2001       |
| (U)  | Demonstrations and test   | 1,600                                       | 1,342                    |                         |                    |                        |                |                    |                |                    | 2,067         |
| (U)  | System integration and engineering support                                      | 1,126                                       | 950                      |                         |                    |                        |                |                    |                |                    | 500           |
| (U)  | Other technical/engineering   | 978   | 1,195                    |                         |                    |                        |                |                    |                |                    | 704           |
| (U)  | Total   | 557   | 420                      |                         |                    |                        |                |                    |                |                    | 425           |
| (U)  |   | 4,261                                       | 3,907                    |                         |                    |                        |                |                    |                |                    | 3,696         |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                         |                    |                        |                |                    |                |                    |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | Contractor or Government Performing Activity                                    | Contract Method/Type or Funding Vehicle     | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000     | Budget FY 2001 | Budget to Complete | Total Program |
|  | Product Development Organizations   |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | General Atomic  | SS/CPFF                                     | Apr 98                   | N/A                     | N/A                | 9,692                  | 3,214          | 2,881              | 3,071          | Continuing         | TBD           |
|  | PM TESAR  |   |                          | N/A                     | N/A                | 2,300                  |                |                    |                | 0                  | 2,300         |
|  | Support and Management Organizations  |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | ASC   |   |                          |                         |                    | 0                      | 417            | 426                | 425            | Continuing         | TBD           |
|  | AD/NAVAIR   |   |                          |                         |                    | 320                    | 0              |                    |                | 0                  | 320           |
|  | Test and Evaluation Organizations   |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | AFOTEC  |   |                          |                         |                    | 795                    | 630            | 600                | 200            | 0                  | 2,225         |
|  | Misc  |   |                          |                         |                    | 330                    |                |                    |                | 0                  | 330           |
| (U)  | <b>Government Furnished Property:</b>   |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | Contract Method/Type or Funding Vehicle   | Award or Obligation Date                    | Delivery Date            | Total Prior to FY 1999  | Budget FY 1999     | Budget FY 2000         | Budget FY 2001 | Budget to Complete | Total Program  |                    |               |
|  | Item Description  |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | Product Development Property  |   |                          |                         |                    |                        |                |                    |                |                    |               |
|  | Support and Management Property   |   |                          |                         |                    |                        |                |                    |                |                    |               |

Project 674755

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Exhibit R-3 (PE 0305205F)

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                | DATE           | February 2000  | PROJECT            |
|--|--|---|----------------|----------------|----------------|--------------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                         |                |                |                |                    |
| 07 - Operational System Development                |  | 0305205F Endurance Unmanned Aerial Vehicles |                | 674755         |                |                    |
| (U) Government Furnished Property Continued;       |  |   |                |                |                |                    |
| Test and Evaluation Property                       |  |   |                |                |                |                    |
| <u>Subtotals</u>                                   |  |   |                |                |                |                    |
| Subtotal Product Development                       |  | Total Prior to FY 1999                      | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete |
|  |  | 11,992                                      | 3,214          | 2,881          | 3,071          | TBD                |
| Subtotal Support and Management                    |  | 320   | 417            | 426            | 425            | TBD                |
| Subtotal Test and Evaluation                       |  | 1,125                                       | 630            | 600            | 200            | 0                  |
| Total Project                                      |  | 13,437                                      | 4,261          | 3,907          | 3,696          | TBD                |

Project 674755

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Exhibit R-3 (PE 0305205F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |             |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|-------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                      |             | PE NUMBER AND TITLE                         |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                  |             | 0305205F Endurance Unmanned Aerial Vehicles |                  |                  |                  |                  |                  |                  |                  | 674799     |               |
| COST (\$ in Thousands)                               |             | FY 1999 Actual                              | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674799   | Global Hawk | 97,493                                      | 73,959           | 103,219          | 66,333           | 44,628           | 45,548           | 46,565           | Continuing       | TBD        |               |

**Notes:**

(1) The DarkStar portion of the HAE UAV ACTD was canceled on 29 Jan 99. Request for reprogramming of \$17M of FY99 DarkStar funds to Global Hawk and Common Ground Segment (DD1415-1 dated 24 Aug 99, DOD Ser. No. FY99-013 PA) was approved by Congress on 23 Dec 99.

(2) Remaining FY01-05 DarkStar and FY00-05 CGS funding lines have been transferred to the Global Hawk System program, to be consolidated under the Global Hawk Program.. The DarkStar and CGS funding lines will be deleted.

**(U) A. Mission Description**

The Global Hawk High Altitude Endurance (HAE) UAV program consists of the Global Hawk air vehicle and the Common Ground Segment (CGS). The Global Hawk System is being designed to provide continuous, all-weather, day/night, wide area surveillance and reconnaissance and includes the communications and interfaces with other theater systems required to support joint tactical warfighters at various levels of command. The Global Hawk air vehicle will be a fully automatic, high-altitude, long endurance unmanned aircraft that is directly responsive to theater tasking. Global Hawk will integrate with the existing tactical airborne reconnaissance architectures for tasking, mission planning, data processing, exploitation, and dissemination. It is designed to provide up to 40,000 sq. nmi. of wide area search radar imagery and either Electro-Optical (EO) or Infrared Radar (IR) imagery with 1m resolution per mission or up to 1900 EO, IR, or radar spot images per mission with 0.3m resolution. The design targeting accuracy is less than 20m CEP. The Global Hawk UAV is designed to standoff, operate in a low-to-moderate air defense threat environment and collect imagery while looking deep into high threat areas.

In FY99 the Global Hawk System continued the user demonstration phase of the ACTD. Funding was used for fabrication and integration of air vehicles 3, 4, and 5, fabrication of the System Integration Lab, airframe improvements, and continued participation in Joint Military Exercises with the other services. Global Hawk entered the user demonstration phase in June 99 and since that time it has flown in 16 exercises, disseminated imagery to 5 different users, flown for extended periods of time overwater (enroute to Alaska), and accumulated over 200 hours in FAA-controlled airspace.

In FY00, Global Hawk funding will complete the remaining work to be done in readying air vehicles 3, 4, & 5 for flight, finish the user demonstrations (ending in June 00), and complete the Military Utility Assessment (MUA), which will render a final evaluation of Global Hawk's utility to the warfighter. Congress added \$15M to the Global Hawk funding line in FY00 to preserve the Global Hawk industrial base. This will be accomplished by ordering long-lead items to begin fabrication of the two Congressionally-authorized ACTD air vehicles for EMD, identifying those operational deficiencies to be addressed during the EMD, and preparation for transitioning to EMD in FY01.



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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                           | DATE   | February 2000 |
|--|---------------------------|--|---------------|
| BUDGET ACTIVITY  |                           | PE NUMBER AND TITLE  | PROJECT       |
| 07 - Operational System Development  |                           | 0305205F Endurance Unmanned Aerial Vehicles  | 674799        |
| (U) A. Mission Description Continued   |                           |  |               |
| FY01 funding will be used to complete fabrication of air vehicles #6 & #7 (for EMD), Non-Recurring Engineering to evolve the Global Hawk to a Block 5 (including spiral development of sensors and other capabilities), initiate spiral development to Block 10 (ORD-compliant air vehicles) and support the overseas demonstration in Australia. The Australians are providing half of the funding for this demonstration effort. |                           |  |               |
| (U)  | FY 1999 (\$ in Thousands) |  |               |
| (U)  | \$13,881                  | Product Development and Testing (Phase II)   |               |
| (U)  | \$40,266                  | Fabrication and Integration of air vehicles #3, #4, and #5 (Phase IIB)   |               |
| (U)  | \$28,463                  | Provided Contractor Demonstration and Evaluation Support necessary to accomplish Military Utility Assessment (Phase III)               |               |
| (U)  | \$9,000                   | System Integration Lab (Development Test Model)  |               |
| (U)  | \$5,883                   | Airframe Reliability and Maintainability Improvements (Producibility)  |               |
| (U)  | \$97,493                  | Total  |               |
| (U)  | FY 2000 (\$ in Thousands) |  |               |
| (U)  | \$38,201                  | Provide Contractor and Government Demonstration and Evaluation Support necessary to accomplish Military Utility Assessment (Phase III) |               |
| (U)  | \$2,200                   | Integrated Logistic Support  |               |
| (U)  | \$58                      | Complete Fabrication and Integration of air vehicles #3, #4, and #5 (Phase IIB)  |               |
| (U)  | \$15,000                  | Added to FY00 program per Congressional plus-up for the following:   |               |
|  |                           | -- Begin ACTD air vehicle #6 & #7 fabrication  |               |
|  |                           | -- Preparation for transition to EMD in FY01 (Address operability, supportability and safety deficiencies identified during the ACTD)  |               |
| (U)  | \$12,798                  | Added to program per consolidation of CGS and Global Hawk into same BPAC:  |               |
|  |                           | -- Development and test of demonstration CGS   |               |
|  |                           | -- Contractor participation in MUA   |               |
|  |                           | -- Government support, studies and related tasks for CGS   |               |
| (U)  | \$5,702                   | Government Support, Studies, and Related Tasks for the Global Hawk program   |               |
| (U)  | \$73,959                  | Total  |               |
| Project 674799   |                           | Page 9 of 25 Pages   |               |
|  |                           | Exhibit R-2A (PE 0305205F)   |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |  | DATE                       | February 2000 |
|--|--|----------------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  | PROJECT                    |               |
| <b>07 - Operational System Development</b>   | <b>0305205F Endurance Unmanned Aerial Vehicles</b>   | <b>674799</b>              |               |
| (U) <b>A. Mission Description Continued</b>  |  |                            |               |
| (U) <b>EY 2001 (\$ in Thousands)</b>   |  |                            |               |
| (U) \$36,800   | Fabrication and Integration of 2 additional ACTD air vehicles for EMD (#6 and #7) (Phase IIC)                      |                            |               |
| (U) \$44,600   | Non-recurring Engineering (NRE) to evolve the Global Hawk System to a Block 5 configuration                        |                            |               |
|  | -- Includes spiral development of sensors and other capabilities   |                            |               |
|  | -- Spiral development (Block 5 to Block 10) of air vehicles which will satisfy needs identified in the MUA and ORD |                            |               |
| (U) \$10,000   | Operational Demonstration in Australia   |                            |               |
| (U) \$6,000  | Provide Government Test and Evaluation Support   |                            |               |
| (U) \$5,819  | Government Support, Studies and Related Tasks for the Global Hawk System Program                                   |                            |               |
| (U) \$103,219  | Total  |                            |               |
| (U) <b>B. Project Change Summary</b>   |  |                            |               |
| A Defense Acquisition Executive (DAE) directive issued on 20 Aug 99, directed the Air Force to initiate an acquisition program with a MSII decision at the end of FY00, buy 2 EMD air vehicles in FY01, and begin production of 2 air vehicles per year in FY02.   |  |                            |               |
| Approval was received from Congress on 23 Dec 99 on a DD1415-1, FY99-013 PA, to transfer \$17M of residual DarkStar funding to the Global Hawk and CGS programs. This transfer is not reflected in this PB submission, as the change has not yet been reflected in the funding database.   |  |                            |               |
| In response to concerns about preserving the Global Hawk industrial base, Congress added \$15M to the program in FY00 and added language authorizing the purchase of two additional ACTD air vehicles for EMD. The Congressional add will be used to begin fabrication of these 2 air vehicles and to begin preparations for EMD, which will begin in FY01, following the MSII acquisition decision in 4QFY00.   |  |                            |               |
| FY99 and FY00 funds for the procurement of air vehicles 6 & 7 and Pre-EMD (evolution of Global Hawk ACTD System into a FY99 Block 5 configuration) was not included in our FY99 and FY00 Budget Justification. Congress approved the reprogramming of FY99 Darkstar funds via DD Form 1415-1, DOD Serial Number FY99-013PA (approved Dec 99) to apply to this task. Additionally, in FY00 Congress added funds and authorized procurement of these additional vehicles. Initiation of this project is reflected within this FY01 Budget Request. |  |                            |               |
| Project 674799   |  | Exhibit R-2A (PE 0305205F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |         |  |          |          | DATE                       | February 2000 |
|---|---------|--|----------|----------|----------------------------|---------------|
| BUDGET ACTIVITY   |         | PE NUMBER AND TITLE                                |          |          | PROJECT                    |               |
| <b>07 - Operational System Development</b>  |         | <b>0305205F Endurance Unmanned Aerial Vehicles</b> |          |          | <b>674799</b>              |               |
| (U) <u>C. Other Program Funding Summary (\$ in Thousands)</u>   |         |  |          |          |                            |               |
|   | FY 1999 | FY 2000  | FY 2001  | FY 2002  | FY 2003                    | FY 2004       |
|   | Actual  | Estimate   | Estimate | Estimate | Estimate                   | Estimate      |
| (U) AF RDT&E  |         |  | 22,388   | 91,457   | 95,315                     | 83,974        |
| (U) Other APPN  |         |  |          |          |                            |               |
| (U) Aircraft Procurement, AF (HAE UAV)  |         |  |          |          |                            |               |
|   |         |  |          |          |                            | 80            |
|   |         |  |          |          |                            | TBD           |
| Funds are associated with preparation for and transition of HAE UAV ACTD to a Global Hawk System production program that will include CGS.  |         |  |          |          |                            |               |
| (U) <u>D. Acquisition Strategy</u>  |         |  |          |          |                            |               |
| The Global Hawk HAE UAV program began as an ACTD, under DARPA, in 1994. Five contractors originally submitted design proposals, with Northrop Grumman (Ryan Aeronautical Center) competitively selected to lead the design / development effort. Under the Development Phase agreement, the contractor will build and test five Global Hawk air vehicles, and a developmental ground segment. Streamlined procurement, using Other Transaction Authority, is being used to delete all non value-added tasks and documentation from the program.   |         |  |          |          |                            |               |
| The Air Force assumed responsibility for the ACTD in October 98. Global Hawk will finish the ACTD phase in June 00, and the Military Utility Assessment (MUA) will be delivered in 4QFY00, providing an overall evaluation of Global Hawk's military utility and operational suitability. An acquisition decision in late 2000 follows delivery of the Military Utility Assessment from JFCOM.  |         |  |          |          |                            |               |
| Based on the DAE directive of 20 Aug 99, the program will transition from an ACTD to a one year EMD (FY01) to an acquisition program (beginning in FY02). The EMD program consists of the total Global Hawk System which includes the CGS. EMD will evolve the Global Hawk System to a Block 5 configuration. While not completely ORD-compliant, these Block 5 air vehicles will have the minimum upgrades necessary to operationalize them for deployment. The program will utilize spiral development to operationalize the design of the EMD air vehicles to Block 5 to Block 10. Block 10 will correct deficiencies identified in the MUA and ORD, specifically those related to safety of flight, operability and supportability. |         |  |          |          |                            |               |
| In FY02 the program will commence procurement of 2 Block 5 air vehicles per year. The next upgrade will be Block 10 (ORD-compliant) air vehicles. Block 10 air vehicles are not budgeted in the current FYDP but will be addressed in future POM submissions.   |         |  |          |          |                            |               |
| (U) <u>E. Schedule Profile</u>  |         |  |          |          |                            |               |
|   | FY 1999 | FY 2000  | FY 2001  |          |                            |               |
| Project 674799  |         | Page 11 of 25 Pages                                |          |          | Exhibit R-2A (PE 0305205F) |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |  |            | DATE          | February 2000 |
|--|---|--|------------|---------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                                |            | PROJECT       |               |
| <b>07 - Operational System Development</b>         |   | <b>0305205F Endurance Unmanned Aerial Vehicles</b> |            | <b>674799</b> |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>  |  |            |               |               |
|  |   | FY 1999  | FY 2000    |               | FY 2001       |
| (U)  | Product Development and Testing (Phase II)  | 13,881   |            |               |               |
| (U)  | Fabrication and Integration of air vehicles #3, #4, and #5 (Phase IIB)  | 40,266   | 58         |               |               |
| (U)  | Provide Contractor Demonstration and Evaluation Support necessary to accomplish Military Utility Assessment (Phase III) | 28,463   | 22,735     |               |               |
| (U)  | System Integration Lab (Development Test Model)   | 9,000  |            |               |               |
| (U)  | Airframe Reliability and Maintainability Improvements (Producibility)   | 5,883  |            |               |               |
| (U)  | Provide Government Demonstration and Evaluation Support necessary to accomplish Military Utility Assessment             |  | 15,466     |               |               |
| (U)  | FY00 Congressional Plus-up for the following:   |  | 15,000     |               |               |
| (U)  | -- Begin air vehicle #6 and #7 fabrication  |  |            |               |               |
| (U)  | -- Begin preparation for transition to EMD in FY01  |  |            |               |               |
| (U)  | Integrated Logistic Support   |  | 2,200      |               |               |
| (U)  | Added to program per consolidation of CGS and Global Hawk into same BPAC:   |  | 12,798     |               |               |
| (U)  | -- Development and test of demonstration CGS  |  |            |               |               |
| (U)  | -- Contractor participation in MUA  |  |            |               |               |
| (U)  | -- Government support, studies and related tasks for the CGS  |  | 5,702      |               | 5,819         |
| (U)  | Government Support, Studies and Related Tasks for the Global Hawk System  |  |            |               | 36,800        |
| (U)  | Fabrication and Integration of air vehicles #6 and #7 (Phase IIC)   |  |            |               | 44,600        |
| (U)  | Non-recurring Engineering (NRE) to evolve the Global Hawk System to a Block 5 configuration                             |  |            |               | 10,000        |
| (U)  | Operational Demonstration in Australia  |  |            |               | 6,000         |
| (U)  | Provide Government Test and Evaluation Support  |  |            |               | 103,219       |
| (U)  | Total   | 97,493   | 73,959     |               |               |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>   |  |            |               |               |
| (U)  | <b>Performing Organizations:</b>  |  |            |               |               |
|  | Contract or   | Contract   |            |               |               |
|  | Government  | Method/Type  | Award or   | Performing    | Project       |
|  | Performing  | or Funding   | Obligation | Activity      | Office        |
|  | Activity  | Vehicle  | Date       | EAC           | EAC           |
|  |   |  |            | Total Prior   | Total         |
|  |   |  |            | to FY 1999    | Program       |
|  |   |  |            | FY 1999       | Budget        |
|  |   |  |            | FY 2000       | Budget to     |
|  |   |  |            | FY 2001       | Complete      |
|  |   |  |            |               | Program       |
| Project 674799                                     |   | Exhibit R-3 (PE 0305205F)                          |            |               |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                    |                | DATE           | PROJECT        |
|--|---|---|--------------------|----------------|----------------|----------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                         |                    |                |                |                |
| 07 - Operational System Development                |   | 0305205F Endurance Unmanned Aerial Vehicles |                    | 674799         |                |                |
| (U)  | <u>Performing Organizations Continued:</u>  |   |                    |                |                |                |
|  | <u>Product Development Organizations</u>    |   |                    |                |                |                |
|  | Ryan Aeronautical Center SS/CPFF/IF         | N/A   | 0                  | 97,493         | 48,172         | TBD            |
|  | Various                                     | N/A   |                    |                | 977            | 977            |
|  | <u>Support and Management Organizations</u> |   |                    |                |                |                |
|  | Various                                     | N/A   | 0                  | 0              | 8,855          | TBD            |
|  | Support ASC                                 |   |                    |                | 1,630          | 1,630          |
|  | <u>Test and Evaluation Organizations</u>    |   |                    |                |                |                |
|  | AFTC  | N/A   | 0                  | 0              | 7,250          | TBD            |
|  | AFOTEC                                      | N/A   | 0                  | 0              | 5,825          | TBD            |
|  | Various                                     | N/A   | 0                  | 0              | 1,250          | TBD            |
|  |   |   | <u>Total Prior</u> | <u>Budget</u>  | <u>Budget</u>  | <u>Total</u>   |
|  |   |   | <u>to FY 1999</u>  | <u>FY 1999</u> | <u>FY 2000</u> | <u>Program</u> |
|  | <u>Subtotals</u>                            |   | 0                  | 97,493         | 49,149         | TBD            |
|  | Subtotal Product Development                |   | 0                  | 0              | 10,485         | TBD            |
|  | Subtotal Support and Management             |   | 0                  | 0              | 14,325         | TBD            |
|  | Subtotal Test and Evaluation                |   | 0                  | 97,493         | 73,959         | TBD            |
|  | Total Project                               |   |                    |                | 103,219        | TBD            |

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Exhibit R-3 (PE 0305205F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                           |                |                  |                  |                  |                  |                  |                  |            |
|---|---------------------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY   |                           | DATE           |                  |                  |                  |                  |                  |                  |            |
| 07 - Operational System Development   |                           | February 2000  |                  |                  |                  |                  |                  |                  |            |
| PE NUMBER AND TITLE   |                           | PROJECT        |                  |                  |                  |                  |                  |                  |            |
| 0305205F Endurance Unmanned Aerial Vehicles   |                           | 674815         |                  |                  |                  |                  |                  |                  |            |
|   |                           | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Total Cost |
| 674815  | DarkStar*                 | 33,715         | 0                | 0                | 0                | 0                | 0                | 0                | 53,783     |
| <b>(U) A. Mission Description</b>   |                           |                |                  |                  |                  |                  |                  |                  |            |
| DarkStar portion of HAE ACTD cancelled 29 Jan 99. On 24 Aug 99 a DD1415-1 was submitted to Congress to transfer \$17M of residual DarkStar funding to the Global Hawk and CGS programs. All FY 01 through 05 funds have been transferred to the Global Hawk System Program.   |                           |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | FY 1999 (\$ in Thousands) |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$16,715                  |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$17,000                  |                |                  |                  |                  |                  |                  |                  |            |
| Contract / Program Closeout   |                           |                |                  |                  |                  |                  |                  |                  |            |
| Transfer to Global Hawk and Common Ground Segment to correct Global Hawk 'must fix' items identified during flight test, mitigate a one-year production break, and enhance pre-Engineering Manufacturing Development (EMD) activities as required by Congress. Funds are also needed to begin pre-EMD on the CGS subprogram. Both Global Hawk and CGS require the procurement of test spare parts to support user demonstrations. |                           |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$33,715                  |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | Total                     |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | FY 2000 (\$ in Thousands) |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$0                       |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$0                       |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | Total                     |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | FY 2001 (\$ in Thousands) |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$0                       |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$0                       |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | Total                     |                |                  |                  |                  |                  |                  |                  |            |
| Project funds have been merged into the Global Hawk system program.   |                           |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | FY 2001 (\$ in Thousands) |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$0                       |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$0                       |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | Total                     |                |                  |                  |                  |                  |                  |                  |            |
| <b>(U) B. Project Change Summary</b>  |                           |                |                  |                  |                  |                  |                  |                  |            |
| <b>(U) C. Other Program Funding Summary (\$ in Thousands)</b>   |                           |                |                  |                  |                  |                  |                  |                  |            |
|   |                           | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Total Cost |
| (U)   | AF RDT&E                  |                |                  |                  |                  |                  |                  |                  |            |
| (U)   | Other APPN                |                |                  |                  |                  |                  |                  |                  |            |
| Project 674815  |                           |                |                  |                  |                  |                  |                  |                  |            |
| Page 15 of 25 Pages   |                           |                |                  |                  |                  |                  |                  |                  |            |
| Exhibit R-2A (PE 0305205F)  |                           |                |                  |                  |                  |                  |                  |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |              |   |   |   | DATE          | February 2000 |
|--|--|--------------|---|---|---|---------------|---------------|
| BUDGET ACTIVITY                                      | PE NUMBER AND TITLE                                |              |   |   |   | PROJECT       |               |
| <b>07 - Operational System Development</b>           | <b>0305205F Endurance Unmanned Aerial Vehicles</b> |              |   |   |   | <b>674815</b> |               |
| (U) <u>D. Acquisition Strategy</u>                   |  |              |   |   |   |               |               |
| N/A  |  |              |   |   |   |               |               |
| (U) <u>E. Schedule Profile</u>                       |  |              |   |   |   |               |               |
| (U) Program terminated                               | 1  | FY 1999<br>2 | 3 | 4 | 1 | 2             |               |
| * denotes completed event                            |  | *            |   |   |   |               |               |
| X denotes planned event                              |  |              |   |   |   |               |               |
|  |  | FY 2000<br>2 | 3 | 4 | 1 | 2             |               |
|  |  |              |   |   |   | FY 2001<br>3  |               |
|  |  |              |   |   |   | 4             |               |

Project 674815
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| <b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b>   |  |                           |                         |                    |                        | DATE                    | <b>February 2000</b> |                         |               |
|---|--|---------------------------|-------------------------|--------------------|------------------------|-------------------------|----------------------|-------------------------|---------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                                |                           |                         |                    |                        |                         |                      |                         |               |
| <b>07 - Operational System Development</b>  | <b>0305205F Endurance Unmanned Aerial Vehicles</b> | <b>PROJECT<br/>674815</b> |                         |                    |                        |                         |                      |                         |               |
| (U) <b>A. Project Cost Breakdown (\$ in Thousands)</b>  | FY 1999  | FY 2000                   | FY 2001                 |                    |                        |                         |                      |                         |               |
| (U)      Contract/program close-out   | 16,715   | 0                         | 0                       |                    |                        |                         |                      | FY 2001<br>0            |               |
| (U)      transfer to Global Hawk and Common Ground Segment to correct Global Hawk must fix items identified during flight test, mitigate a one-year production break, and enhance pre-engineering Manufacturing Development (EMD) activities as required by Congress. | 17,000   | 0                         | 0                       |                    |                        |                         |                      | 0                       |               |
| (U)          Total  | 33,715   | 0                         | 0                       |                    |                        |                         |                      | 0                       |               |
| (U) <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>   |  |                           |                         |                    |                        |                         |                      |                         |               |
| (U) <u>Performing Organizations:</u>  |  |                           |                         |                    |                        |                         |                      |                         |               |
| Contractor or Government Performing Activity  | Contract Method/Type or Funding Vehicle            | Award or Obligation Date  | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999          | Budget FY 2000       | Budget FY 2001 Complete | Total Program |
| <u>Product Development Organizations</u>  |  |                           |                         |                    |                        |                         |                      |                         |               |
| LMSW  | SS/CPIIF   | N/A                       | N/A                     | N/A                | 20,068                 | 16,715                  | 0                    | 0                       | 36,783        |
| Transfer to Global Hawk and Common Ground Segment - Ryan Aeronautical Center Support and Management Organizations Test and Evaluation Organizations   |  |                           | N/A                     | N/A                |                        | 17,000                  | 0                    | 0                       | 17,000        |
| (U) <u>Government Furnished Property:</u>   |  |                           |                         |                    |                        |                         |                      |                         |               |
| Contract Method/Type or Funding Vehicle   | Award or Obligation Date                           | Delivery Date             | Total Prior to FY 1999  | Budget FY 1999     | Budget FY 2000         | Budget FY 2001 Complete | Total Program        |                         |               |
| Item Description Product Development Property Support and Management Property Test and Evaluation Property  |  |                           |                         |                    |                        |                         |                      |                         |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  | DATE  | February 2000 |
|--|--|---|---------------|
| BUDGET ACTIVITY                                    |  | PROJECT                                     |               |
| 07 - Operational System Development                |  | 0305205F Endurance Unmanned Aerial Vehicles |               |
| PE NUMBER AND TITLE                                |  | 674815                                      |               |
|  |  | Budget                                      | Budget to     |
|  |  | FY 1999                                     | FY 2000       |
|  |  | FY 2001                                     | Complete      |
|  |  | Total                                       | Program       |
| Subtotals  |  |   |               |
| Subtotal Product Development                       |  | 20,068                                      | 53,783        |
| Subtotal Support and Management                    |  |   |               |
| Subtotal Test and Evaluation                       |  |   |               |
| Total Project                                      |  | 20,068                                      | 53,783        |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                                    |   |                  |                  |                  |                  |                  |                  |                  |
|--|------------------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| DATE February 2000   |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| BUDGET ACTIVITY  |                                    | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  |
| 07 - Operational System Development  |                                    | 0305205F Endurance Unmanned Aerial Vehicles   |                  |                  |                  |                  |                  |                  |                  |
| COST (\$ in Thousands)   |                                    | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete |
| 674816 Common Ground Segment   |                                    | 47,548  | 0                | 0                | 0                | 0                | 0                | 0                | 0                |
| <b>(U) A. Mission Description</b>  |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| The Common Ground Segment (CGS) is an integral part of the HAE UAV system. With the cancellation of the DarkStar portion of the HAE UAV ACTD, there is no need to maintain a separate BPAC for the CGS. Accordingly, funds from FY00-05 have been merged into the Global Hawk program (BPAC 674799). |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| <b>(U) FY 1999 (\$ in Thousands)</b>   |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$11,764                           | Development and test in support of Global Hawk system                                 |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$14,303                           | Contractor participation in Military Utility Assessment                               |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$10,336                           | Government participation in Military Utility Assessment                               |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$11,145                           | Government support, studies, and related tasking support of the HAE UAV ACTD programs |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$47,548                           | Total   |                  |                  |                  |                  |                  |                  |                  |
| <b>(U) FY 2000 (\$ in Thousands)</b>   |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$0                                | Project funds have been merged into Global Hawk                                       |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$0                                | Total   |                  |                  |                  |                  |                  |                  |                  |
| <b>(U) FY 2001 (\$ in Thousands)</b>   |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$0                                | Project funds have been merged into Global Hawk                                       |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$0                                | Total   |                  |                  |                  |                  |                  |                  |                  |
| <b>(U) B. Project Change Summary</b>   |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| Project funds have been transferred into the Global Hawk System program (BPAC 674799)  |                                    |   |                  |                  |                  |                  |                  |                  |                  |
| <b>(U) C. Other Program Funding Summary (\$ in Thousands)</b>  |                                    |   |                  |                  |                  |                  |                  |                  |                  |
|  |                                    | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete |
| (U)  | AF RDT&E                           |   |                  |                  |                  |                  |                  |                  | Total Cost       |
| (U)  | Other APPN                         |   |                  |                  |                  |                  |                  |                  |                  |
| (U)  | Aircraft Procurement, AF (HAE UAV) |   | 22,966           | 94,046           | 97,978           | 86,008           | 74,006           | Continuing       | TBD              |
| Project 674816   |                                    | Exhibit R-2A (PE 0305205F)  |                  |                  |                  |                  |                  |                  |                  |

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |   |          |          |          |                |          |                |            | DATE    | February 2000 |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|--|---|---|----------|----------|----------|----------------|----------|----------------|------------|---------|---------------|----------------|--|--|--|--|----------------|--|----------------|--|--|--|---|---|---|---|---|---|---|---|---|---|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE                         |          |          |          |                |          |                |            | PROJECT |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
| 07 - Operational System Development                  |   | 0305205F Endurance Unmanned Aerial Vehicles |          |          |          |                |          |                |            | 674816  |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
| (U)  | <u>C. Other Program Funding Summary (\$ in Thousands)</u>   |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | FY 1999   | FY 2000                                     | FY 2001  | FY 2002  | FY 2003  | FY 2004        | FY 2005  | Cost to        | Total Cost |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | Actual  | Estimate                                    | Estimate | Estimate | Estimate | Estimate       | Estimate | Complete       |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | Funds are associated with preparation for and transition of HAE UAV ACTD to a Global Hawk System production program that will include CGS and be funded from BPAC 674799.   |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
| (U)  | <u>D. Acquisition Strategy</u>  |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | CGS funds have been merged with Project 674799 - Global Hawk as the Global Hawk System transitions from an ACTD to a formal acquisition program.  |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
| (U)  | <u>E. Schedule Profile</u>  |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | <table border="0"> <tr> <td></td> <td colspan="2"><u>FY 1999</u></td> <td></td> <td></td> <td></td> <td colspan="2"><u>FY 2000</u></td> <td colspan="2"><u>FY 2001</u></td> <td></td> </tr> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>1</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> |   |          |          |          |                |          |                |            |         |               | <u>FY 1999</u> |  |  |  |  | <u>FY 2000</u> |  | <u>FY 2001</u> |  |  |  | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 |  |  |  | * |  |  |  |  |  |  |  |  |  |  |  | * |  |  |  |  |  |  |
|  | <u>FY 1999</u>  |   |          |          |          | <u>FY 2000</u> |          | <u>FY 2001</u> |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | 1   | 2   | 3        | 4        | 1        | 2              | 3        | 4              | 1          | 2       |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  |   |   | *        |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  |   |   |          | *        |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
| (U)  | Demonstration support award   |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
| (U)  | Fabricate demo CGS  |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | * denotes completed event   |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |
|  | X denotes planned event   |   |          |          |          |                |          |                |            |         |               |                |  |  |  |  |                |  |                |  |  |  |   |   |   |   |   |   |   |   |   |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |

Project 674816

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Exhibit R-2A (PE 0305205F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |             |            |            |   |         |               |           |         |
|--|---|-------------|------------|------------|---|---------|---------------|-----------|---------|
| BUDGET ACTIVITY                                    |   |             |            |            | DATE  |         | PROJECT       |           |         |
| 07 - Operational System Development                |   |             |            |            | 0305205F Endurance Unmanned Aerial Vehicles |         | February 2000 |           |         |
| PE NUMBER AND TITLE                                |   |             |            |            | 0305205F Endurance Unmanned Aerial Vehicles |         | 674816        |           |         |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)   |             |            |            | FY 1999                                     | FY 2000 | FY 2001       |           |         |
| (U)  | Development and test in support of Global Hawk system                                 |             |            |            | 11,764                                      | 0       | 0             |           |         |
| (U)  | Contractor Participation in the Military Utility Assessment                           |             |            |            | 14,303                                      | 0       | 0             |           |         |
| (U)  | Government Participation in the Military Utility Assessment                           |             |            |            | 10,336                                      | 0       | 0             |           |         |
| (U)  | Government Support, Studies and Related Tasks in support of the HAE UAV ACTD Programs |             |            |            | 11,145                                      | 0       | 0             |           |         |
| (U)  | Total   |             |            |            | 47,548                                      | 0       | 0             |           |         |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands)              |             |            |            |   |         |               |           |         |
| (U)  | Performing Organizations:   |             |            |            |   |         |               |           |         |
|  | Contract or   | Contract    |            |            |   |         |               |           |         |
|  | Government  | Method/Type | Award or   | Performing | Project                                     |         |               |           |         |
|  | Performing  | or Funding  | Obligation | Activity   | Office                                      |         |               |           |         |
|  | Activity  | Vehicle     | Date       | EAC        | EAC   |         |               |           |         |
|  | Product Development Organizations   |             |            |            | Total Prior                                 | Budget  | Budget        | Budget to | Total   |
|  |   |             |            |            | to FY 1999                                  | FY 1999 | FY 2000       | Complete  | Program |
|  | Raytheon  |             |            | N/A        | N/A   | 13,485  | 0             | 0         | 13,485  |
|  | Ryan Aeronautical Center  |             |            | N/A        | N/A   | 10,795  | 0             | 0         | 10,795  |
|  | Various   |             |            | N/A        | N/A   | 994     | 0             | 0         | 994     |
|  | Support and Management Organizations  |             |            |            |   |         |               |           |         |
|  | ASC   |             |            | N/A        | N/A   | 2,272   | 0             | 0         | 2,272   |
|  | Various   |             |            | N/A        | N/A   | 9,716   | 0             | 0         | 9,716   |
|  | Test and Evaluation Organizations   |             |            |            |   |         |               |           |         |
|  | AFMTC   |             |            | N/A        | N/A   | 4,307   | 0             | 0         | 4,307   |
|  | AFOTEC  |             |            | N/A        | N/A   | 4,914   | 0             | 0         | 4,914   |
|  | Various   |             |            | N/A        | N/A   | 1,065   | 0             | 0         | 1,065   |
| (U)  | Government Furnished Property:  |             |            |            |   |         |               |           |         |
|  | Contract  |             |            |            |   |         |               |           |         |
|  | Method/Type   | Award or    |            |            |   |         |               |           |         |
|  | or Funding  | Obligation  |            |            |   |         |               |           |         |
|  | Vehicle   | Date        |            |            |   |         |               |           |         |
|  | Item  | Delivery    |            |            | Total Prior                                 | Budget  | Budget        | Budget to | Total   |
|  | Description   | Date        |            |            | to FY 1999                                  | FY 1999 | FY 2000       | Complete  | Program |
| Project 674816                                     |   |             |            |            | Exhibit R-3 (PE 0305205F)                   |         |               |           |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |   |                | DATE           | February 2000      |
|--|-------------|---|----------------|----------------|--------------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE                         |                | PROJECT        |                    |
| 07 - Operational System Development                |             | 0305205F Endurance Unmanned Aerial Vehicles |                | 674816         |                    |
| (U) Government Furnished Property Continued:       |             |   |                |                |                    |
|  | Contract    |   |                |                |                    |
| Item   | Method/Type | Award or                                    |                |                |                    |
|  | or Funding  | Obligation                                  | Delivery       |                |                    |
| Description  | Vehicle     | Date  | Date           |                |                    |
| Product Development Property                       |             |   |                |                |                    |
| Support and Management Property                    |             |   |                |                |                    |
| Test and Evaluation Property                       |             |   |                |                |                    |
| Subtotals  |             |   |                |                |                    |
| Subtotal Product Development                       |             | Total Prior to FY 1999                      | Budget FY 1999 | Budget FY 2000 | Budget to Complete |
|  |             |   | 25,274         | 0              | 0                  |
| Subtotal Support and Management                    |             |   | 11,988         | 0              | 0                  |
| Subtotal Test and Evaluation                       |             |   | 10,286         | 0              | 0                  |
| Total Project                                      |             |   | 47,548         | 0              | 0                  |
| Subtotals  |             |   |                |                |                    |
| Subtotal Product Development                       |             | Total Prior to FY 1999                      | Budget FY 1999 | Budget FY 2000 | Budget to Complete |
|  |             |   | 25,274         | 0              | 0                  |
| Subtotal Support and Management                    |             |   | 11,988         | 0              | 0                  |
| Subtotal Test and Evaluation                       |             |   | 10,286         | 0              | 0                  |
| Total Project                                      |             |   | 47,548         | 0              | 0                  |

Project 674816

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Exhibit R-3 (PE 0305205F)

## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |   |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|--|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE                         |                  |                  |                  |                  |                  |                  |                  | PROJECT                    |               |
| 07 - Operational System Development                  |  | 0305205F Endurance Unmanned Aerial Vehicles |                  |                  |                  |                  |                  |                  |                  | 674883                     |               |
|  |  | FY 1999 Actual                              | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| 674883   | JTC/SIL MUSE   | 0   | 0                | 2,300            | 0                | 0                | 0                | 0                | 0                | TBD                        |               |
| (U)  | <b>A. Mission Description</b>  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
|  | The Joint Technology Center/System Integration Laboratory Multiple UAV Simulation Environment (JTC/SIL MUSE) provides a simulation tool for development of the Army's tactical UAV (TUAV) and the Navy's vertical takeoff UAV (VTUAV). The level of future Air Force participation in this project beyond FY01 is the subject of on-going discussions between the Air Force and OSD. |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | FY 1999 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$0  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$0  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | Total  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | FY 2000 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$0  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$0  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | Total  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | FY 2001 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$2,300  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | JTC/SIL MUSE   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | Total  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | <b>B. Project Change Summary</b>   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
|  | A separate project code within PE 35205F provides visibility of the funds supporting the JTC/SIL MUSE. The level of future Air Force participation in this project beyond FY01 is the subject of on-going discussions between the Air Force and OSD.   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
|  | FY 1999 Actual   | FY 2000 Estimate                            | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost       |                            |               |
| (U)  | 0  | 0   | 2,300            | 0                | 0                | 0                | 0                | Continuing       | TBD              |                            |               |
| (U)  | AF RDT&E   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | Other APPN   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | <b>D. Acquisition Strategy</b>   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
|  | N/A  |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Project 674883                                       |  | Page 23 of 25 Pages                         |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305205F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |   |   |   |         | DATE | February 2000 |
|--|--|---|---|---|---------|------|---------------|
| BUDGET ACTIVITY                                      | PE NUMBER AND TITLE                                |   |   |   |         |      | PROJECT       |
| <b>07 - Operational System Development</b>           | <b>0305205F Endurance Unmanned Aerial Vehicles</b> |   |   |   |         |      | <b>674883</b> |
| (U) <u>E. Schedule Profile</u>                       |  |   |   |   |         |      |               |
|  | FY 1999  |   |   |   | FY 2000 |      | FY 2001       |
|  | 1  | 2 | 3 | 4 | 1       | 2    | 3             |
| (U) No activity planned                              |  |   |   |   |         |      | 4             |

Project 674883
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                           |          |             |            |            |   |  |                           |  |  |
|--|----------|-------------|------------|------------|---|--|---------------------------|--|--|
| BUDGET ACTIVITY  |          |             |            |            | DATE  |  | PROJECT                   |  |  |
| 07 - Operational System Development  |          |             |            |            | 0305205F Endurance Unmanned Aerial Vehicles |  | February 2000             |  |  |
| (U) A. Project Cost Breakdown (\$ in Thousands)                              |          |             |            |            | FY 1999                                     |  | FY 2000                   |  |  |
| (U) No activity planned  |          |             |            |            |   |  |                           |  |  |
| (U) Total  |          |             |            |            |   |  |                           |  |  |
| (U) B. Budget Acquisition History and Planning Information (\$ in Thousands) |          |             |            |            |   |  |                           |  |  |
| (U) Performing Organizations:  |          |             |            |            |   |  |                           |  |  |
| Contract or  | Contract | Method/Type | Award or   | Performing | Project                                     |  |                           |  |  |
| Government   |          | or Funding  | Obligation | Activity   | Office                                      |  |                           |  |  |
| Performing   |          | Vehicle     | Date       | EAC        | EAC   |  |                           |  |  |
| Activity   |          |             |            |            |   |  |                           |  |  |
| Product Development Organizations  |          |             |            |            |   |  |                           |  |  |
| No activity planned  |          |             |            |            |   |  |                           |  |  |
| Support and Management Organizations   |          |             |            |            |   |  |                           |  |  |
| Test and Evaluation Organizations  |          |             |            |            |   |  |                           |  |  |
| (U) Government Furnished Property:   |          |             |            |            |   |  |                           |  |  |
| Contract   | Contract | Method/Type | Award or   | Delivery   |   |  |                           |  |  |
| Item   |          | or Funding  | Obligation | Date       |   |  |                           |  |  |
| Description  | Vehicle  |             | Date       |            |   |  |                           |  |  |
| Product Development Property   |          |             |            |            |   |  |                           |  |  |
| Support and Management Property  |          |             |            |            |   |  |                           |  |  |
| Test and Evaluation Property   |          |             |            |            |   |  |                           |  |  |
| Subtotals  |          |             |            |            |   |  |                           |  |  |
| Subtotal Product Development   |          |             |            |            |   |  |                           |  |  |
| Subtotal Support and Management  |          |             |            |            |   |  |                           |  |  |
| Subtotal Test and Evaluation   |          |             |            |            |   |  |                           |  |  |
| Total Project  |          |             |            |            |   |  |                           |  |  |
| Project 674883   |          |             |            |            |   |  | Exhibit R-3 (PE 0305205F) |  |  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                |                  |                  |                  |                  |                  |                  |                  |            | DATE                                     | February 2000 |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
|---|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|--|---------------|---|---------|---------|---------|------------|--------------------|---------|---------|---------|-----|-----------------------------------|---------|---------|--|--|-------------------------------------|------|----|--|--|---------------------------------------|--|--|--|--|
| BUDGET ACTIVITY   |                |                  |                  |                  |                  |                  |                  |                  |            | PE NUMBER AND TITLE                      |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| 07 - Operational System Development   |                |                  |                  |                  |                  |                  |                  |                  |            | 0305206F Airborne Reconnaissance Systems |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| COST (\$ in Thousands)  | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| Total Program Element (PE) Cost   | 123,538        | 136,221          | 136,913          | 105,398          | 142,410          | 151,187          | 125,433          | Continuing       | TBD        |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| 674817 Joint SIGINT Avionics Family (JSAF)  | 78,073         | 94,296           | 85,121           | 60,947           | 73,238           | 69,800           | 46,668           | Continuing       | TBD        |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| 674818 Advanced Technology  | 9,826          | 9,200            | 2,126            | 1,085            | 18,192           | 29,299           | 25,568           | Continuing       | TBD        |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| 674819 Common Data Link (CDL)   | 35,639         | 32,725           | 44,799           | 38,506           | 46,118           | 47,047           | 47,974           | Continuing       | TBD        |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| 674882 Compass Bright   | 0              | 0                | 4,867            | 4,860            | 4,862            | 5,041            | 5,223            | Continuing       | TBD        |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| Quantity of RDT&E Articles  | 0              | 0                | 0                | 0                | 0                | 0                | 0                | Continuing       | TBD        |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| <b>(U) A. Mission Description</b>   |                |                  |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| This program funds and coordinates the development of advanced defense airborne reconnaissance technologies to ensure systems satisfy strategies and architectures to assure U.S. ability to support warfighter intelligence needs in the face of rapidly developing threat technology, proliferation of advanced weaponry, and uncertain political alignments. This program funds the development of the technologies that respond to evolving threats by emphasizing multi-service utility, interoperability among existing and planned complementary systems (i.e., sensors, ground systems, data links, and manned and unmanned platforms), and timely dissemination of intelligence information to operational forces. |                |                  |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| <b>(U) B. Budget Activity Justification</b>   |                |                  |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| This program is categorized as Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.   |                |                  |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| <b>(U) C. Program Change Summary (\$ in Thousands)</b>  |                |                  |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| <table><tr><td>Previous President's Budget (FY 2000 PBR)</td><td>FY 1999</td><td>FY 2000</td><td>FY 2001</td><td>Total Cost</td></tr><tr><td>Appropriated Value</td><td>126,402</td><td>124,608</td><td>136,591</td><td>TBD</td></tr><tr><td>Adjustments to Appropriated Value</td><td>126,768</td><td>139,608</td><td></td><td></td></tr><tr><td>a. Congressional/General Reductions</td><td>-366</td><td>-1</td><td></td><td></td></tr><tr><td>b. Small Business Innovative Research</td><td></td><td></td><td></td><td></td></tr></table>  |                |                  |                  |                  |                  |                  |                  |                  |            |  |               | Previous President's Budget (FY 2000 PBR) | FY 1999 | FY 2000 | FY 2001 | Total Cost | Appropriated Value | 126,402 | 124,608 | 136,591 | TBD | Adjustments to Appropriated Value | 126,768 | 139,608 |  |  | a. Congressional/General Reductions | -366 | -1 |  |  | b. Small Business Innovative Research |  |  |  |  |
| Previous President's Budget (FY 2000 PBR)   | FY 1999        | FY 2000          | FY 2001          | Total Cost       |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| Appropriated Value  | 126,402        | 124,608          | 136,591          | TBD              |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| Adjustments to Appropriated Value   | 126,768        | 139,608          |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| a. Congressional/General Reductions   | -366           | -1               |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |
| b. Small Business Innovative Research   |                |                  |                  |                  |                  |                  |                  |                  |            |  |               |   |         |         |         |            |                    |         |         |         |     |                                   |         |         |  |  |                                     |      |    |  |  |                                       |  |  |  |  |

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Exhibit R-2 (PE 0305206F)

## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |  | DATE    | February 2000 |
|---|--|--|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                      |         |               |
| 07 - Operational System Development                 |  | 0305206F Airborne Reconnaissance Systems |         |               |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued  |  |         |               |
|   | c. Omnibus or Other Above Threshold Reprogram  | FY 1999                                  | FY 2000 | FY 2001       |
|   | d. Below Threshold Reprogram   |  | -749    |               |
|   | e. Rescissions   | -2,173                                   | -2,637  |               |
|   | f. Other   | -691                                     |         |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |  |         | 322           |
| (U)   | Current Budget Submit/FY 2001 PBR  | 123,538                                  | 136,221 | 136,913       |
| (U)   | Significant Program Changes:   |  |         |               |
|   | Funding for U-2 Advanced Defensive Systems in FY01-03 was transferred to PE 0305202F, Dragon U-2. Funding for Compass Bright in FY01-05 was transferred from PE 0305206G into PE 0305206F. |  |         |               |
|   |  |  |         | Total Cost    |
|   |  |  |         | TBD           |
|   |  |  |         | TBD           |

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Exhibit R-2 (PE 0305206F)

UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                                     |  |                  |                  |                  |                  |                  |                  |            |
|---|-------------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY   |                                     | DATE   |                  |                  |                  |                  |                  |                  |            |
| 07 - Operational System Development   |                                     | February 2000  |                  |                  |                  |                  |                  |                  |            |
|   |                                     | PROJECT  |                  |                  |                  |                  |                  |                  |            |
|   |                                     | 0305206F Airborne Reconnaissance Systems                                     |                  |                  |                  |                  |                  |                  |            |
|   |                                     | 674817   |                  |                  |                  |                  |                  |                  |            |
| COST (\$ in Thousands)  |                                     | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |            |
|   |                                     | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Total Cost |
| 674817  | Joint SIGINT Avionics Family (JSAF) | 78,073   | 94,296           | 85,121           | 60,947           | 73,238           | 69,800           | 46,668           | TBD        |
| <p>(U) <b>A. Mission Description</b><br/>         Provides funds for the development of sensor systems to modernize the SIGINT capability of the DoD airborne reconnaissance fleet, through a series of incremental upgrades, to meet the 2010 threat. Upgrades will embrace an open systems approach, with recognized standards, commonality, modularity, scalability, and reconfigurability. The incremental approach will ensure access to the latest technology as future budget year dollars become available. The open architecture will provide competitive opportunities to contractors who find innovative ways to use new technologies. It will also permit maximum use of commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) capabilities developed for other applications. The goal is full compliance with all CRD requirements and all Joint Airborne SIGINT Architecture (JASA) by 2010. The development and modification of the lead integration aircraft (EP-3E) for the initial JSAF modules will provide a mechanism to begin development and operational assessment of the JSAF components. Producing JSAF components will be provided for the airborne fleet (manned and unmanned) for integration on the Air Force's RC-135V/W (Rivet Joint), the Army's Aerial Common Sensor (ACS) platform, the Air Force's U-2, and the Navy's EP-3E.</p> |                                     |  |                  |                  |                  |                  |                  |                  |            |
| (U)   | FY 1999 (\$ in Thousands)           |  |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$44,866                            | Continued Low Band SubSystem (LBSS) development and integration              |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$16,908                            | Continued High Band SubSystem (HBSS) development and integration             |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$2,190                             | Continued Rivet Joint Platform development and integration                   |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$7,830                             | Continued EP-3E Platform development and integration                         |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$2,040                             | Continued U-2 Platform development and integration                           |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$4,239                             | Continued SPO Operations, Systems Engineering, Program Management Activities |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$78,073                            | Total  |                  |                  |                  |                  |                  |                  |            |
| (U)   | FY 2000 (\$ in Thousands)           |  |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$33,603                            | Continue Low Band SubSystem (LBSS) development and integration               |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$20,324                            | Continue High Band SubSystem (HBSS) development                              |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$7,362                             | Continue Rivet Joint platform development for JSAF integration and testing   |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$15,096                            | Continue EP-3 platform development for JSAF integration and testing          |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$7,100                             | Continue U-2 platform development for JSAF integration and testing           |                  |                  |                  |                  |                  |                  |            |
| (U)   | \$1,000                             | Begin ACS platform development for JSAF integration and testing              |                  |                  |                  |                  |                  |                  |            |
| Project 674817  |                                     | Page 3 of 21 Pages   |                  |                  |                  |                  |                  |                  |            |
|   |                                     | Exhibit R-2A (PE 0305206F)   |                  |                  |                  |                  |                  |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |  | DATE            | February 2000     |
|--|--|-----------------|-------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  | PROJECT         |                   |
| <b>07 - Operational System Development</b>   | <b>0305206F Airborne Reconnaissance Systems</b>  | <b>674817</b>   |                   |
| (U) <b>A. Mission Description Continued</b>  |  |                 |                   |
| (U) <b>FY 2000 (\$ in Thousands) Continued</b>   |  |                 |                   |
| (U) \$3,022  | Begin Active Interference Cancellation (IC) and Modeling & Simulation (M&S) Efforts    |                 |                   |
| (U) \$2,200  | Begin Near Term Follow-On-Program (FOP)  |                 |                   |
| (U) \$4,589  | Continue SPO Operations, Systems Engineering, Program Management Activities            |                 |                   |
| (U) \$94,296   | Total  |                 |                   |
| (U) <b>FY 2001 (\$ in Thousands)</b>   |  |                 |                   |
| (U) \$15,854   | Continue Low Band SubSystem (LBSS) development and integration                         |                 |                   |
| (U) \$14,117   | Complete High Band SubSystem (HBSS) development and integration                        |                 |                   |
| (U) \$2,542  | Continue Rivet Joint platform development for JSAF integration and testing             |                 |                   |
| (U) \$5,800  | Continue EP-3 platform development for JSAF integration and testing                    |                 |                   |
| (U) \$7,869  | Continue U-2 platform development for JSAF integration and testing                     |                 |                   |
| (U) \$3,500  | Continue ACS platform development for JSAF integration and testing                     |                 |                   |
| (U) \$4,274  | Continue Active Interference Cancellation (IC) and Modeling & Simulation (M&S) Efforts |                 |                   |
| (U) \$17,400   | Begin Follow-On Program (FOP) development  |                 |                   |
| (U) \$8,900  | Begin JSAF Developmental Support Unit (DSU) development                                |                 |                   |
| (U) \$4,865  | Continue SPO Operations, Systems Engineering, Program Management Activities            |                 |                   |
| (U) \$85,121   | Total  |                 |                   |
| (U) <b>B. Project Change Summary</b>   |  |                 |                   |
| (U) <b>C. Other Program Funding Summary (\$ in Thousands)</b>  |  |                 |                   |
|  |  | <b>FY 1999</b>  | <b>FY 2000</b>    |
|  |  | <u>Actual</u>   | <u>Estimate</u>   |
|  |  | <b>FY 2001</b>  | <b>FY 2002</b>    |
|  |  | <u>Estimate</u> | <u>Estimate</u>   |
|  |  | <b>FY 2003</b>  | <b>FY 2004</b>    |
|  |  | <u>Estimate</u> | <u>Estimate</u>   |
|  |  | <b>FY 2005</b>  | <b>Total Cost</b> |
|  |  | <u>Estimate</u> | <u>Complete</u>   |
| (U) None   |  |                 |                   |
| (U) <b>D. Acquisition Strategy</b>   |  |                 |                   |
| The JSAF acquisition approach emphasizes full and open competition for the initial LBSS and HBSS development programs, as well as the FOPs that are planned at three year intervals beginning in 2001. A competitive source selection will be conducted for each new development effort. Estimated production costs will be a criteria for evaluation and determination of best value, thus providing justification for the follow-on sole source production contract. Although logistics support costs will not be a factor in best value determination for the initial HBSS and LBSS efforts due to the unknown variables of reliability, maintainability, mean time between failure, etc., of |  |                 |                   |

Project 674817

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Exhibit R-2A (PE 0305206F)

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

07 - Operational System Development

0305206F Airborne Reconnaissance Systems

PROJECT

674817

(U) D. Acquisition Strategy Continued

newly developed hardware and software, the initial contractor logistics support (CLS) contract will be awarded sole source to the successful developer. This approach ensures the government receives the best value for each JSAF effort, while providing incentive to the winning development contractor. The open architecture will provide competitive opportunities during each development effort to contractors who find innovative ways to use new technologies, while permitting maximum use of commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) capabilities developed for other applications. With delivery of the core capability, the requirements community will agree on the next increment to be acquired - which will be competitively procured. The open systems architecture provides a vehicle for exploitation and integration of COTS and GOTS, allowing the government to refresh, upgrade, enhance and evolve its system capabilities. This follow-on, competitive effort is expected to run a 2 year development and 1 year test cycle.

(U) E. Schedule Profile

|   | FY 1999 |   |   |   | FY 2000 |   |   |   | FY 2001 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| (U) Engineering Milestones  |         |   |   |   |         |   |   |   |         |   |   |   |
| (U) LBSS System Deliveries  |         |   |   |   |         |   |   |   |         |   |   |   |
| (U) RJ LBSS Integration & Flight Test Begins                          |         |   |   |   |         |   | X |   |         | X |   |   |
| (U) EP-3 LBSS Integration & Flight Test Begins                        |         |   |   |   |         |   | X |   |         |   |   |   |
| (U) LBSS & HBSS Integration for U-2 Begins                            |         |   |   |   |         |   |   | X |         |   |   |   |
| (U) U-2 LBSS Integration & Flight Test Begins                         |         |   |   |   |         |   |   |   | X       |   |   |   |
| (U) High Band Prototype (HBP) flight test complete; OCONUS deployment |         |   | * |   |         |   |   |   |         | X |   |   |
| (U) High Band SubSystem (HBSS) CDR                                    |         |   |   | * |         |   |   |   |         |   |   |   |
| (U) HBSS Factory Acceptance Test (FAT)                                |         |   |   |   |         |   |   |   |         |   |   |   |
| (U) U-2 HBSS Integration & Flight Test Begins                         |         |   |   |   |         |   |   | X |         | X |   |   |
| (U) JSAF Production Begins (procurement funds in platform PEs)        |         |   |   |   |         |   |   |   |         |   |   |   |
| (U) JSAF DSU Development Begins                                       |         |   |   |   |         |   |   |   |         |   |   |   |
| (U) JSAF Follow-On Program Begins                                     |         |   |   |   |         |   |   |   |         |   |   |   |
| * - Denotes completed event   |         |   |   |   |         |   | X |   |         |   |   |   |
| X- Denotes planned event  |         |   |   |   |         |   |   |   |         |   |   |   |

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Exhibit R-2A (PE 0305206F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |  |                          |                           |                |                        |                |                |                    |
|--|---|--|--------------------------|---------------------------|----------------|------------------------|----------------|----------------|--------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                      |                          | DATE                      |                | PROJECT                |                |                |                    |
| 07 - Operational System Development                |   | 0305206F Airborne Reconnaissance Systems |                          | February 2000             |                | 674817                 |                |                |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)   |  |                          |                           |                |                        |                |                |                    |
| (U)  | Hardware Development  | FY 1999                                  | FY 2000                  | FY 2001                   |                |                        |                |                | FY 2001            |
| (U)  | Software Development  | 24,710                                   | 20,805                   | 18,843                    |                |                        |                |                | 18,843             |
| (U)  | Platform Integration  | 18,532                                   | 20,693                   | 21,273                    |                |                        |                |                | 21,273             |
| (U)  | Integration and Test Support  | 12,060                                   | 30,558                   | 19,473                    |                |                        |                |                | 19,473             |
| (U)  | Systems Engineering   | 6,177                                    | 6,935                    | 8,510                     |                |                        |                |                | 8,510              |
| (U)  | Program Management  | 12,355                                   | 10,716                   | 12,157                    |                |                        |                |                | 12,157             |
| (U)  | Total   | 4,239                                    | 4,589                    | 4,865                     |                |                        |                |                | 4,865              |
| (U)  |   | 78,073                                   | 94,296                   | 85,121                    |                |                        |                |                | 85,121             |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands)                    |  |                          |                           |                |                        |                |                |                    |
| (U)  | Performing Organizations:   |  |                          |                           |                |                        |                |                |                    |
|  | Contractor or Government  | Contract Method/Type or Funding Vehicle  | Award or Obligation Date | Performing Activity       | Project Office | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete |
|  | Activity  |  |                          | EAC                       | EAC            |                        |                |                | Total Program      |
|  | Product Development Organizations   |  |                          |                           |                |                        |                |                |                    |
|  | Sanders (LBSS)  | CPAF                                     | Feb 97                   | 151,300                   | 151,300        | 0                      | 44,866         | 33,603         | Continuing         |
|  | TRW (HBSS)  | CPAF                                     | Dec 97                   | 54,700                    | 54,700         | 0                      | 16,908         | 20,324         | Continuing         |
|  | TBD (FOP, DSU, Active IC; M&S)  | TBD                                      | FY00/01                  | TBD                       | TBD            | 0                      | 0              | 5,222          | Continuing         |
|  | Platform Integration (Includes AF, Army, Navy)  | Various                                  | Various                  |                           |                | 0                      | 12,060         | 30,558         | Continuing         |
|  | Support and Management Organizations  |  |                          |                           |                |                        |                |                |                    |
|  | Various   | Various                                  | Various                  |                           |                | 0                      | 4,239          | 4,589          | Continuing         |
|  | Test and Evaluation Organizations   |  |                          |                           |                |                        |                |                |                    |
|  | Note: Funds prior to FY99 are in PE 0305206D, Airborne Reconnaissance Advanced Development. |  |                          |                           |                |                        |                |                |                    |
| Project 674817                                     |   | Page 6 of 21 Pages                       |                          | Exhibit R-3 (PE 0305206F) |                |                        |                |                |                    |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |  |                   |                   |                   |                       |                  |  |  | DATE | February 2000 |
|--|--|--|-------------------|-------------------|-------------------|-----------------------|------------------|--|--|------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                      |                   |                   |                   |                       | PROJECT          |  |  |      |               |
| 07 - Operational System Development                |  | 0305206F Airborne Reconnaissance Systems |                   |                   |                   |                       | 674817           |  |  |      |               |
|  |  | Total Prior<br>to FY 1999                | Budget<br>FY 1999 | Budget<br>FY 2000 | Budget<br>FY 2001 | Budget to<br>Complete | Total<br>Program |  |  |      |               |
| Subtotals  |  |  |                   |                   |                   |                       |                  |  |  |      |               |
| Subtotal Product Development                       |  | 0  | 73,834            | 89,707            | 80,256            | TBD                   | TBD              |  |  |      |               |
| Subtotal Support and Management                    |  | 0  | 4,239             | 4,589             | 4,865             | TBD                   | TBD              |  |  |      |               |
| Subtotal Test and Evaluation                       |  |  |                   |                   |                   |                       |                  |  |  |      |               |
| Total Project                                      |  | 0  | 78,073            | 94,296            | 85,121            | TBD                   | TBD              |  |  |      |               |

Project 674817

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Exhibit R-3 (PE 0305206F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |   | PE NUMBER AND TITLE                      |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |   | 0305206F Airborne Reconnaissance Systems |                  |                  |                  |                  |                  |                  |                  | 674818     |               |
| COST (\$ in Thousands)  |   | FY 1999 Actual                           | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674818  | Advanced Technology   | 9,826                                    | 9,200            | 2,126            | 1,085            | 18,192           | 29,299           | 25,568           | Continuing       | TBD        |               |
| Note: Funding for U-2 Advanced Defense Systems transfers to PE 0305202F beginning in FY01.  |   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| <b>(U) A. Mission Description</b><br>There are two primary objectives for the Advanced Technology funding: (1) To evaluate the utility and maturity of technology for airborne reconnaissance applications; and (2) To reduce the risk of employing emerging technologies in system upgrades, or new system acquisitions by integrating and exercising them in developmental and operational tests. These technologies address high priority collection requirements critical to the future of airborne reconnaissance systems. Specific priorities for development include increased geolocation accuracy, advanced sensor data fusion, and high data rate communications. This project also includes funding for U-2 Advanced Defense Systems development in FY00. Near term development and feasibility demonstrations of specific technologies are conducted, followed by transition into production systems to support operational capabilities. |   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| * FY99 is understated by 55K. BTR not reflected in ABIDES database.   |   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 1999 (\$ in Thousands)</b><br>High Data Rate Communications: Completed development of air-to-air lasercomm demonstration terminals.<br>Modeling and Simulation: Developed software process model of Tactical Intelligence ground systems.<br>SYERS P3I: Completed development and flight test of SYERS P3I sensor systems.<br>Moving Target Exploitation (MTE): Begin Phase 1 development of automatic target recognition and imaging capability.<br>Geolocation: Continued development of capability to coregister airborne imagery with national data bases.<br>Total |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>FY 2000 (\$ in Thousands)</b><br>Sensor Fusion: ATACCS (Airborne Targeting and Cross Cueing System) risk reduction activities to integrate U-2 IMINT/ELINT/MASINT collection systems<br>Geolocation: Continue development of coregistration of imagery in national data bases and application of advanced exploitation tools.<br>High Data Rate Communications: Continue evaluation of air-to-air lasercomm system<br>Advanced Defense System: Initiate development of U-2 Defensive Systems and conduct risk reduction project<br>Total                                   |  |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |   |          |          |          |                            |          |          |            |
|--|---|---|----------|----------|----------|----------------------------|----------|----------|------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE                             |          | DATE     |          | February 2000              |          |          |            |
| <b>07 - Operational System Development</b>           |   | <b>0305206F Airborne Reconnaissance Systems</b> |          |          |          | <b>PROJECT 674818</b>      |          |          |            |
| (U)  | <u>A. Mission Description Continued</u>   |   |          |          |          |                            |          |          |            |
| (U)  | FY 2001 (\$ in Thousands)   |   |          |          |          |                            |          |          |            |
| (U)  | \$145 Sensor Fusion: Continue analysis of ATACCS airborne processing, communication links and ground processing components and interfaces   |   |          |          |          |                            |          |          |            |
| (U)  | \$1,500 Geolocation: Continue development and begin transition of enhanced geolocation capability to ground systems.  |   |          |          |          |                            |          |          |            |
| (U)  | \$481 High Data Rate Communications: Complete air-to-air lasercomm evaluation   |   |          |          |          |                            |          |          |            |
| (U)  | \$2,126 Total   |   |          |          |          |                            |          |          |            |
| (U)  | <u>B. Project Change Summary</u>  |   |          |          |          |                            |          |          |            |
| (U)  | <u>C. Other Program Funding Summary (\$ in Thousands)</u>   |   |          |          |          |                            |          |          |            |
|  |   | FY 1999   | FY 2000  | FY 2001  | FY 2002  | FY 2003                    | FY 2004  | FY 2005  | Total Cost |
|  |   | Actual  | Estimate | Estimate | Estimate | Estimate                   | Estimate | Estimate |            |
| (U)  | PE 0305202F, Dragon U-2   | 0   | 0        | 17,616   | 16,443   | 6,285                      | 0        | 0        |            |
|  | (3600 RDT&E)  |   |          |          |          |                            |          |          |            |
| (U)  | <u>D. Acquisition Strategy</u>  |   |          |          |          |                            |          |          |            |
|  | The program targets high payoff technologies to satisfy critical unmet airborne reconnaissance collection requirements. Funds are provided to begin development and insertion of these technologies, and to reduce risk associated with their implementation in production systems. Emphasis is placed on maximizing commercial and national development efforts and investment. Funds are provided to various government laboratories and program offices to conduct these technology development efforts. Multiple contracting methods are used including the use of Engineering Change Proposals (ECPs) to modify existing contracts. Contracts have been awarded both competitively and on a sole source basis. |   |          |          |          |                            |          |          |            |
| (U)  | <u>E. Schedule Profile</u>  |   |          |          |          |                            |          |          |            |
|  |   |   |          | FY 1999  | FY 2000  | FY 2001                    |          |          |            |
|  |   | 1   | 2        | 3        | 4        | 1                          | 2        | 3        | 4          |
| (U)  | Sensor Fusion   |   |          |          |          |                            |          |          |            |
| (U)  | - ATACCS Phase I Contract Award   |   |          |          |          |                            |          |          |            |
| (U)  | - ATACCS Risk Reduction Demos   |   |          |          |          |                            |          |          |            |
| (U)  | Moving Target Exploitation (MTE)  |   |          |          |          |                            |          |          |            |
| (U)  | - Begin Phase I MTE development   |   | *        |          |          |                            |          |          |            |
| (U)  | Modeling and Simulation   |   | *        |          |          |                            |          |          |            |
| (U)  | - Report Tactical GS simulation results   |   |          |          |          |                            |          |          |            |
| Project 674818                                       |   | Page 9 of 21 Pages                              |          | 1461     |          | Exhibit R-2A (PE 0305206F) |          |          |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)       |  |  |  |  |  | DATE | February 2000 |
|--|--|--|--|--|--|------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                      |  |  |  |  |      |               |
|  | 0305206F Airborne Reconnaissance Systems |  |  |  |  |      |               |
|  | PROJECT<br>674818                        |  |  |  |  |      |               |
| (U) E. Schedule Profile Continued                          |  |  |  |  |  |      |               |
| (U) Geolocation  |  |  |  |  |  |      |               |
| (U) - Prototype deployed to support Operation Allied Force |  |  |  |  |  |      |               |
| (U) - CDR  |  |  |  |  |  |      |               |
| (U) - Test Readiness Review                                |  |  |  |  |  |      |               |
| (U) - Factory Acceptance Test                              |  |  |  |  |  |      |               |
| (U) SYERS P3I  |  |  |  |  |  |      |               |
| (U) - Flight Test SYERS S/N 7                              |  |  |  |  |  |      |               |
| (U) - Flight Test SYERS S/N 8                              |  |  |  |  |  |      |               |
| (U) HDR Communications                                     |  |  |  |  |  |      |               |
| (U) - Laser Terminal Lab Test                              |  |  |  |  |  |      |               |
| (U) U-2 Defensive Systems                                  |  |  |  |  |  |      |               |
| (U) - U-2 Advanced Defensive System (ADS) milestone 2      |  |  |  |  |  |      |               |
| (U) - ADS Phase 2 contract award                           |  |  |  |  |  |      |               |
| *-Denotes completed event                                  |  |  |  |  |  |      |               |
| X-Denotes planned event                                    |  |  |  |  |  |      |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |  |                        |                           |                |                    |
|--|---|---|--------------------------|-------------------------|--|------------------------|---------------------------|----------------|--------------------|
| BUDGET ACTIVITY                                    |   |   |                          |                         | DATE                                     |                        | PROJECT                   |                |                    |
| 07 - Operational System Development                |   |   |                          |                         | 0305206F Airborne Reconnaissance Systems |                        | February 2000             |                |                    |
| PE NUMBER AND TITLE                                |   |   |                          |                         | 0305206F Airborne Reconnaissance Systems |                        | 674818                    |                |                    |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          |                         |  |                        |                           |                |                    |
| (U)  | Hardware and Software Development   |   |                          |                         | FY 1999                                  | FY 2000                | FY 2001                   |                |                    |
| (U)  | Systems Engineering   |   |                          |                         | 7,231                                    | 7,234                  | 1,581                     |                |                    |
| (U)  | Contractor Engineering Support  |   |                          |                         | 400                                      | 140                    | 295                       |                |                    |
| (U)  | Government Engineering Support  |   |                          |                         | 1,611                                    | 900                    | 150                       |                |                    |
| (U)  | Total   |   |                          |                         | 584                                      | 926                    | 100                       |                |                    |
| (U)  |   |   |                          |                         | 9,826                                    | 9,200                  | 2,126                     |                |                    |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                         |  |                        |                           |                |                    |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |  |                        |                           |                |                    |
|  | Contract or Government Performing Activity                                      | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC                       | Total Prior to FY 1999 | Budget FY 1999            | Budget FY 2000 | Budget to Complete |
|  | Product Development Organizations   |   |                          |                         |  |                        |                           |                |                    |
|  | Raytheon  | Various                                 | ongoing                  | TBD                     | TBD                                      | 0                      | 1,500                     |                | 0                  |
|  | Lockheed Martin Skunkworks  | Various                                 | ongoing                  | TBD                     | TBD                                      | 0                      | 1,255                     |                | 0                  |
|  | Marconi Information Systems FPLOE   |   | 18 Nov 96                | TBD                     | TBD                                      | 0                      | 475                       | 380            | Continuing         |
|  | Trex Enterprises  | CPFF                                    | 9 Aug 96                 | TBD                     | TBD                                      | 0                      | 1,920                     | 50             | 0                  |
|  | Veridian  | CPFF                                    | 9 Aug 96                 | TBD                     | TBD                                      | 0                      | 445                       | 50             | 0                  |
|  | Def Syst Contr  | TBD                                     | TBD                      | TBD                     | TBD                                      | 0                      | 0                         | 8,170          | 0                  |
|  | Other   | TBD                                     | TBD                      | TBD                     | TBD                                      | 0                      | 2,254                     | 79             | Continuing         |
|  | Support and Management Organizations  |   |                          |                         |  |                        |                           |                |                    |
|  | Other Gov't Orgs  | Multiple                                | Multiple                 | TBD                     | TBD                                      | 0                      | 1,977                     | 471            | Continuing         |
|  | Test and Evaluation Organizations   |   |                          |                         |  |                        |                           |                |                    |
|  | Subtotals   |   |                          |                         |  | Total Prior to FY 1999 | Budget FY 1999            | Budget FY 2000 | Budget to Complete |
|  | Subtotal Product Development  |   |                          |                         |  | 0                      | 7,849                     | 8,729          | TBD                |
|  | Subtotal Support and Management   |   |                          |                         |  | 0                      | 1,977                     | 471            | TBD                |
|  | Subtotal Test and Evaluation  |   |                          |                         |  | 0                      | 9,826                     | 9,200          | TBD                |
|  | Total Project   |   |                          |                         |  | 0                      | 9,826                     | 9,200          | TBD                |
| Project 674818                                     |   |   |                          |                         | Page 11 of 21 Pages                      |                        | Exhibit R-3 (PE 0305206F) |                |                    |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                |                  |                  |                  |                  |                  |                  |                  |            |
|---|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| DATE February 2000  |                |                  |                  |                  |                  |                  |                  |                  |            |
| PROJECT 674819  |                |                  |                  |                  |                  |                  |                  |                  |            |
| PE NUMBER AND TITLE   |                |                  |                  |                  |                  |                  |                  |                  |            |
| 0305206F Airborne Reconnaissance Systems  |                |                  |                  |                  |                  |                  |                  |                  |            |
| BUDGET ACTIVITY   |                |                  |                  |                  |                  |                  |                  |                  |            |
| 07 - Operational System Development   |                |                  |                  |                  |                  |                  |                  |                  |            |
| COST (\$ in Thousands)  |                |                  |                  |                  |                  |                  |                  |                  |            |
|   | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
| 674819 Common Data Link (CDL)   | 35,639         | 32,725           | 44,799           | 38,506           | 46,118           | 47,047           | 47,974           | Continuing       | TBD        |
| <p><b>(U) A. Mission Description</b></p> <p>The objective of the CDL effort within the Air Force is to define an interoperable command, control and communications capability for intelligence and reconnaissance assets to include both manned and unmanned platforms. CDL will achieve interoperable communications paths by employing an architecture based on developed hardware, software, and waveforms to promote commonality among the Services. The CDL program will maintain design configuration commonality resulting in lower life-cycle costs. The CDL design will permit existing and future reconnaissance assets to operate worldwide, providing sensor data directly to ground sites or via satellite or air-to-air relay when the asset and ground site are not within line-of-sight. This effort will integrate commercial satellite communications into the available satellite relay options to ensure sufficient wideband data relay capability. The system will have sufficient bandwidth to accommodate numerous sensors collecting SIGINT, IMINT (including video), Multi-spectral and other data. Modular design allows for future technology insertion. The commonality of modular components reduces non-recurring engineering and life cycle costs to the DoD user. Interoperability provides for the exchange of data across service or agency boundaries.</p> |                |                  |                  |                  |                  |                  |                  |                  |            |
| <p>(U) FY 1999 (\$ in Thousands)</p> <p>(U) \$3,317 Continued configuration control of CDL architecture, specifications and modules.</p> <p>(U) \$4,045 Continued development of CDL and Tactical Common Data Link (TCDL) interface to additional platforms.</p> <p>(U) \$3,140 Continued to assess development of commercial network interface standards and impact to CDL interface.</p> <p>(U) \$8,501 Continued engineering and integration of commercial satellite communication network to support airborne reconnaissance platform relay requirements.</p> <p>(U) \$450 Began engineering and integration support of airborne reconnaissance platform requirements into National Space Communications Program.</p> <p>(U) \$5,995 Completed covert waveform development/miniaturation/air-to-air link under the ABIT program.</p> <p>(U) \$486 Continued SATCOM interoperability enhancements.</p> <p>(U) \$5,325 Completed Tactical CDL flight demonstration.</p> <p>(U) \$1,005 Continued transition to wideband bulk encryption on all CDL systems.</p> <p>(U) \$3,375 Began development of Dual Data Link II (DDL-2) for the U-2</p> <p>(U) \$35,639 Total</p>   |                |                  |                  |                  |                  |                  |                  |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   | DATE  | February 2000              |
|--|---|---|----------------------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE   | PROJECT                    |
| 07 - Operational System Development                  |   | 0305206F Airborne Reconnaissance Systems  | 674819                     |
| (U)  | <u>A. Mission Description Continued</u> |   |                            |
| (U)  | <u>FY 2000 (\$ in Thousands)</u>        |   |                            |
| (U)  | \$12,050                                | Continue engineering/ integration of commercial satellite communication network to support airborne reconnaissance platform relay requirements and studies and analysis of alternative satellite communications to support airborne reconnaissance relay requirements   |                            |
| (U)  | \$2,500                                 | Continue development of Tactical CDL demonstration hardware and flight demonstration and continue to develop design for operational suitability on Intelligence, Surveillance & Reconnaissance (ISR) platforms including Predator   |                            |
| (U)  | \$4,000                                 | Continue integration engineering of ABIT in ISR platforms including RC-135and Global Hawk.  |                            |
| (U)  | \$2,300                                 | Continue to assess development of commercial network interface standards and incorporation of commercial technologies where practical to the CDL interface including Asynchronous Transfer Mode (ATM) on TCDDL.   |                            |
| (U)  | \$2,645                                 | Continue configuration control of CDL architecture, specifications, and modules.  |                            |
| (U)  | \$2,000                                 | Continue development of link modifications to incorporate wideband bulk encryption.   |                            |
| (U)  | \$530                                   | Continue SATCOM interoperability enhancements.  |                            |
| (U)  | \$2,500                                 | Continue development of CDL and TCDDL interface to additional platforms including Airborne Reconnaissance Low (ARL).  |                            |
| (U)  | \$4,200                                 | Continue development of Dual Data link upgrade for U-2.   |                            |
| (U)  | \$32,725                                | Total   |                            |
| (U)  | <u>FY 2001 (\$ in Thousands)</u>        |   |                            |
| (U)  | \$17,728                                | Continue engineering and integration of commercial satellite communication network to support airborne reconnaissance platform relay requirements and lease one additional transponder to support Predator and Global Hawk and studies/analysis of alternative satellite communications to support airborne reconnaissance relay requirements.              |                            |
| (U)  | \$4,000                                 | Continue development of Tactical CDL demonstration hardware and flight demonstration, and continue to develop design for operational suitability on ISR platforms including potential flight demonstrations on ARL, GUARDRAIL Legacy Replacement, P-3, EP-3, F/A-18 SHARP, VTUAV and Light Airborne Multi-Purpose System (LAMPS) and ATM interface upgrade. |                            |
| (U)  | \$5,129                                 | Continue ABIT integration engineering of ABIT in ISR platforms including RC-135 and Global Hawk.  |                            |
| (U)  | \$4,164                                 | Continue to assess development of commercial network interface standards and incorporation of commercial technologies where practical to the CDL interface including upgraded U-2 sensors and Global Hawk SAR.  |                            |
| (U)  | \$3,549                                 | Continue configuration control of CDL architecture, specifications, and modules.  |                            |
| (U)  | \$1,310                                 | Continue development of link modifications to incorporate wideband bulk encryption.   |                            |
| (U)  | \$1,500                                 | Continue SATCOM interoperability enhancements.  |                            |
| (U)  | \$5,419                                 | Continue development of CDL interface to additional platform and surface terminal equipment (eg JSTARS, TARS, CHBDL) and advanced technology insertion activities   |                            |
| Project 674819                                       |   | Page 13 of 21 Pages   | Exhibit R-2A (PE 0305206F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |         |          |          |          |  |          |          |          |            |
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| BUDGET ACTIVITY   |         |          |          |          | DATE                                     |          |          |          |            |
| PROJECT   |         |          |          |          | February 2000                            |          |          |          |            |
| PE NUMBER AND TITLE   |         |          |          |          | PROJECT                                  |          |          |          |            |
| 07 - Operational System Development   |         |          |          |          | 0305206F Airborne Reconnaissance Systems |          |          |          |            |
|   |         |          |          |          | 674819                                   |          |          |          |            |
| (U) <u>A. Mission Description Continued</u>   |         |          |          |          |  |          |          |          |            |
| (U) FY 2001 (\$ in Thousands) Continued   |         |          |          |          |  |          |          |          |            |
| (U) \$2,000 Continue development of DDL-2.  |         |          |          |          |  |          |          |          |            |
| (U) \$44,799 Total  |         |          |          |          |  |          |          |          |            |
| (U) <u>B. Project Change Summary</u>  |         |          |          |          |  |          |          |          |            |
| None.   |         |          |          |          |  |          |          |          |            |
| (U) <u>C. Other Program Funding Summary (\$ in Thousands)</u>   |         |          |          |          |  |          |          |          |            |
|   | FY 1999 | FY 2000  | FY 2001  | FY 2002  | FY 2003                                  | FY 2004  | FY 2005  | Cost to  | Total Cost |
|   | Actual  | Estimate | Estimate | Estimate | Estimate                                 | Estimate | Estimate | Complete |            |
| (U) None  |         |          |          |          |  |          |          |          |            |
| (U) <u>D. Acquisition Strategy</u>  |         |          |          |          |  |          |          |          |            |
| The CDL involves a multitude of technology projects which will provide for a common, interoperable wideband data link standard that has been mandated by ASD/C3I policy. Program funds are leveraged with the Service program funds to satisfy project objectives. Funds are provided to various government laboratories and program offices to fund on-going technology efforts. The individual Services use Engineering Change Proposals (ECPs) and modify existing contracts that have been awarded both competitively and on a sole source basis to implement various technology efforts. |         |          |          |          |  |          |          |          |            |
| (U) <u>E. Schedule Profile</u>  |         |          |          |          |  |          |          |          |            |
|   | FY 1999 |          | FY 2000  |          | FY 2001                                  |          |          |          |            |
|   | 1       | 2        | 3        | 4        | 1  | 2        | 3        | 4        |            |
| (U) Continue Commercial Satellite Transponder Leases  | *       |          |          |          | X  |          |          | X        |            |
| (U) Complete Phase 2 Tactical CDL Flight Demo on Predator   |         |          |          |          |  |          |          |          |            |
| (U) Phase 2a Tactical CDL Dev. Program Complete on Predator   |         |          |          | *        |  |          |          |          |            |
| (U) Begin TCDDL modification for ARL  |         |          |          |          |  |          |          |          |            |
| (U) Field TCDDL on ARL  |         |          |          |          |  | X        |          |          |            |
| (U) Initial ABIT U-2 Testing Complete   | *       |          |          |          |  |          |          |          |            |
| (U) Complete ABIT RC-135 Design   |         |          |          |          | X  |          |          |          |            |
| (U) Initial RC-135 ABIT unit delivery   |         |          |          |          |  | X        |          |          |            |
| (U) ABIT RC-135 Flight test   |         |          |          |          |  |          |          | X        |            |
| (U) CDL/TARS Pod Integration Study  |         |          |          |          | X  |          |          |          |            |
| Project 674819  |         |          |          |          | Exhibit R-2A (PE 0305206F)               |          |          |          |            |



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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |  |  |  |  |  |  |  |  | DATE                                     | February 2000 | PROJECT |
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| BUDGET ACTIVITY                                      |  |  |  |  |  |  |  |  |  | 674819                                   |               |         |
| 07 - Operational System Development                  |  |  |  |  |  |  |  |  |  | 0305206F Airborne Reconnaissance Systems |               |         |
| PE NUMBER AND TITLE                                  |  |  |  |  |  |  |  |  |  | 674819                                   |               |         |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                              |                                   |  |            |            |         |  |  |  |  | DATE          | PROJECT |
|---|-----------------------------------|--|------------|------------|---------|--|--|--|--|---------------|---------|
| BUDGET ACTIVITY   |                                   | PE NUMBER AND TITLE                      |            |            |         |  |  |  |  |               |         |
| 07 - Operational System Development   |                                   | 0305206F Airborne Reconnaissance Systems |            |            |         |  |  |  |  | February 2000 | 674819  |
| <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |                                   |  |            |            |         |  |  |  |  |               |         |
| (U)   | Hardware and Software Development |  |            |            |         |  |  |  |  |               |         |
| (U)   | Systems Engineering               |  |            |            |         |  |  |  |  |               |         |
| (U)   | Satellite Communications          |  |            |            |         |  |  |  |  |               |         |
| (U)   | Configuration Management          |  |            |            |         |  |  |  |  |               |         |
| (U)   | Contractor Engineering Support    |  |            |            |         |  |  |  |  |               |         |
| (U)   | Government Engineering Support    |  |            |            |         |  |  |  |  |               |         |
| (U)   | Total                             |  |            |            |         |  |  |  |  |               |         |
| <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |                                   |  |            |            |         |  |  |  |  |               |         |
| <b>Performing Organizations:</b>  |                                   |  |            |            |         |  |  |  |  |               |         |
| (U)   | Contractor or Government          | Method/Type                              | Award or   | Performing | Project |  |  |  |  |               |         |
|   | Performing                        | or Funding                               | Obligation | Activity   | Office  |  |  |  |  |               |         |
|   | Activity                          | Vehicle                                  | Date       | EAC        | EAC     |  |  |  |  |               |         |
| <b>Product Development Organizations</b>  |                                   |  |            |            |         |  |  |  |  |               |         |
|   | L3Com                             | Multiple                                 | Multiple   |            |         |  |  |  |  |               |         |
|   | California Microwave              | CPFF                                     | Mar 99     | TBD        | TBD     |  |  |  |  |               |         |
|   | Harris Corp                       | Other                                    | 23 Jul 97  | TBD        | TBD     |  |  |  |  |               |         |
|   |                                   | Transaction                              |            |            |         |  |  |  |  |               |         |
|   | Motorola                          | Multiple                                 | Multiple   | TBD        | TBD     |  |  |  |  |               |         |
|   | Other                             | Multiple                                 | Multiple   |            |         |  |  |  |  |               |         |
| <b>Support and Management Organizations</b>                                     |                                   |  |            |            |         |  |  |  |  |               |         |
|   | COMSAT RSI                        | FFP                                      | 17 Jul 95  |            |         |  |  |  |  |               |         |
|   | Various                           | Multiple                                 | Multiple   |            |         |  |  |  |  |               |         |
| <b>Test and Evaluation Organizations</b>  |                                   |  |            |            |         |  |  |  |  |               |         |
|   | JITC                              | MIPR                                     | FY99       |            |         |  |  |  |  |               |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  | DATE           | February 2000      |
|--|--|----------------|--------------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE                      | PROJECT        |                    |
| 07 - Operational System Development                | 0305206F Airborne Reconnaissance Systems | 674819         |                    |
| Subtotals  | Total Prior to FY 1999                   | Budget FY 1999 | Budget FY 2000     |
| Subtotal Product Development                       | 0  | 21,477         | 16,495             |
| Subtotal Support and Management                    | 0  | 13,930         | 16,045             |
| Subtotal Test and Evaluation                       | 0  | 232            | 185                |
| Total Project                                      | 0  | 35,639         | 32,725             |
|  |  | Budget FY 2001 | Budget to Complete |
|  |  | 20,570         | TBD                |
|  |  | 23,981         | TBD                |
|  |  | 248            | TBD                |
|  |  | 44,799         | TBD                |
|  |  |                | Total Program      |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                        |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
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| BUDGET ACTIVITY   |                        | PE NUMBER AND TITLE                      |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
| 07 - Operational System Development   |                        | 0305206F Airborne Reconnaissance Systems |                  |                  |                  |                  |                  |                  |                  | 674882     |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
|   | COST (\$ in Thousands) | FY 1999 Actual                           | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
| 674882  | Compass Bright         | 0  | 0                | 4,867            | 4,860            | 4,862            | 5,041            | 5,223            | 0                | 0          |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
| <p><b>(U) A. Mission Description</b><br/>           The COMPASS BRIGHT program develops advanced Air Force specific SIGINT capabilities to ensure that time-sensitive SIGINT collections against emerging and future target signals occur and reach the battle execution management centers fast enough to be of immediate value in the conduct of military operations.</p> <p>Note: Funding in FY99 and FY00 are in National Security Agency PE 0305206G. FY01-05 funding was transferred to Air Force (PE 0305206F) from PE 0305206G.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u><br/>           (U) \$0 No Activity<br/>           (U) \$0 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u><br/>           (U) \$0 No Activity<br/>           (U) \$0 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u><br/>           (U) \$4,689 Continue COMPASS BRIGHT (NexGen Receiver, Active Interference Cancellation, other projects) development projects<br/>           (U) \$178 SPO operations, Program Management Activities<br/>           (U) \$4,867 Total</p> <p><b>(U) B. Project Change Summary</b></p> <p><b>(U) C. Other Program Funding Summary (\$ in Thousands)</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1999 Actual</th> <th>FY 2000 Estimate</th> <th>FY 2001 Estimate</th> <th>FY 2002 Estimate</th> <th>FY 2003 Estimate</th> <th>FY 2004 Estimate</th> <th>FY 2005 Estimate</th> <th>Cost to Complete</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) AF RDT&amp;E</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Other APPN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                        |  |                  |                  |                  |                  |                  |                  |                  |            |               | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost | (U) AF RDT&E |  |  |  |  |  |  |  |  |  | (U) Other APPN |  |  |  |  |  |  |  |  |  |
|   | FY 1999 Actual         | FY 2000 Estimate                         | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost       |            |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
| (U) AF RDT&E  |                        |  |                  |                  |                  |                  |                  |                  |                  |            |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |
| (U) Other APPN  |                        |  |                  |                  |                  |                  |                  |                  |                  |            |               |                |                  |                  |                  |                  |                  |                  |                  |            |              |  |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |

Project 674882

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Exhibit R-2A (PE 0305206F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |         | DATE                                     | February 2000 |   | PROJECT |   |         |         |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---------|--|---------------|---|---------|---|---------|---------|---|---|---------|---|--|---------|--|--|--|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|--|--|--|--|--|--|--|--|--|--|--|--|------------------------------------|--|--|--|--|--|--|--|--|--|---|--|--|-----------------------|--|--|--|--|--|--|--|--|--|--|---|--|------------------------------|--|--|--|--|--|--|--|--|--|--|---|--|------------------------|--|--|--|--|--|--|--|--|--|--|--|---|--------------------------------------|--|--|--|--|--|--|--|--|--|---|--|--|----------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| BUDGET ACTIVITY   |         | PE NUMBER AND TITLE                      |               |   | PROJECT |   |         |         |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| 07 - Operational System Development   |         | 0305206F Airborne Reconnaissance Systems |               |   | 674882  |   |         |         |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>D. Acquisition Strategy</b><br/>           The COMPASS BRIGHT program objective is to develop technologies for application in SIGINT systems/subsystems. Acquisition and production of these developed technologies will occur within the appropriate platform programs. On-going COMPASS BRIGHT technology development and demonstration contracts will continue through existing laboratory relationships and other existing contractual vehicles. The acquisition approach for future development projects will emphasize full and open competition.</p>   |         |  |               |   |         |   |         |         |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>E. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="4">FY 1999</th> <th colspan="3">FY 2000</th> <th colspan="3">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>(U) NextGen Receiver</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) -Digital Receiver Dev Complete</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>(U) -LRM Dev Complete</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>(U) - Integr &amp; Test Complete</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>(U) -Receiver Delivery</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>(U) Active Interference Cancellation</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>(U) - Complete Prototype Testing</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |         |  |               |   |         |   | FY 1999 |         |   |   | FY 2000 |   |  | FY 2001 |  |  |  | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | (U) NextGen Receiver |  |  |  |  |  |  |  |  |  |  |  |  | (U) -Digital Receiver Dev Complete |  |  |  |  |  |  |  |  |  | X |  |  | (U) -LRM Dev Complete |  |  |  |  |  |  |  |  |  |  | X |  | (U) - Integr & Test Complete |  |  |  |  |  |  |  |  |  |  | X |  | (U) -Receiver Delivery |  |  |  |  |  |  |  |  |  |  |  | X | (U) Active Interference Cancellation |  |  |  |  |  |  |  |  |  | X |  |  | (U) - Complete Prototype Testing |  |  |  |  |  |  |  |  |  |  |  |  |
|   | FY 1999 |  |               |   | FY 2000 |   |         | FY 2001 |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
|   | 1       | 2  | 3             | 4 | 1       | 2 | 3       | 4       | 1 | 2 | 3       | 4 |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) NextGen Receiver  |         |  |               |   |         |   |         |         |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) -Digital Receiver Dev Complete  |         |  |               |   |         |   |         |         |   | X |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) -LRM Dev Complete   |         |  |               |   |         |   |         |         |   |   | X       |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) - Integr & Test Complete  |         |  |               |   |         |   |         |         |   |   | X       |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) -Receiver Delivery  |         |  |               |   |         |   |         |         |   |   |         | X |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Active Interference Cancellation  |         |  |               |   |         |   |         |         |   | X |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) - Complete Prototype Testing  |         |  |               |   |         |   |         |         |   |   |         |   |  |         |  |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                      |  |  |  |  |  |  |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |   |  |  |                       |  |  |  |  |  |  |  |  |  |  |   |  |                              |  |  |  |  |  |  |  |  |  |  |   |  |                        |  |  |  |  |  |  |  |  |  |  |  |   |                                      |  |  |  |  |  |  |  |  |  |   |  |  |                                  |  |  |  |  |  |  |  |  |  |  |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |             |            |            |  |         |                           |  |  |
|--|---|-------------|------------|------------|--|---------|---------------------------|--|--|
| BUDGET ACTIVITY                                    |   |             |            |            | DATE                                     |         | PROJECT                   |  |  |
| 07 - Operational System Development                |   |             |            |            | 0305206F Airborne Reconnaissance Systems |         | February 2000             |  |  |
| PE NUMBER AND TITLE                                |   |             |            |            | 0305206F Airborne Reconnaissance Systems |         | 674882                    |  |  |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |             |            |            |  |         |                           |  |  |
| (U)  | COMPASS BRIGHT projects   |             |            |            | FY 1999                                  | FY 2000 | FY 2001                   |  |  |
| (U)  | SPO Operations/Program Management Activities                                    |             |            |            | 0  | 0       | 4,689                     |  |  |
| (U)  | Total   |             |            |            | 0  | 0       | 178                       |  |  |
| (U)  |   |             |            |            | 0  | 0       | 4,867                     |  |  |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |             |            |            |  |         |                           |  |  |
| (U)  | <u>Performing Organizations:</u>  |             |            |            |  |         |                           |  |  |
|  | Contract or   | Contract    |            |            |  |         |                           |  |  |
|  | Government  | Method/Type | Award or   | Performing | Project                                  |         |                           |  |  |
|  | Performing  | or Funding  | Obligation | Activity   | Office                                   |         |                           |  |  |
|  | Activity  | Vehicle     | Date       | EAC        | EAC                                      |         |                           |  |  |
|  | Product Development Organizations   |             |            |            |  |         |                           |  |  |
|  | Various   | Various     | Various    | TBD        | TBD                                      |         |                           |  |  |
|  | Support and Management Organizations  |             |            |            |  |         |                           |  |  |
|  | Various   | Various     | Various    | TBD        | TBD                                      |         |                           |  |  |
|  | Test and Evaluation Organizations   |             |            |            |  |         |                           |  |  |
|  | None  |             |            |            |  |         |                           |  |  |
| (U)  | <u>Government Furnished Property:</u>   |             |            |            |  |         |                           |  |  |
|  | Contract  |             |            |            |  |         |                           |  |  |
|  | Method/Type   | Award or    |            |            |  |         |                           |  |  |
|  | or Funding  | Obligation  |            |            |  |         |                           |  |  |
|  | Vehicle   | Date        |            |            |  |         |                           |  |  |
|  | Product Development Property  |             |            |            |  |         |                           |  |  |
|  | None  |             |            |            |  |         |                           |  |  |
|  | Support and Management Property   |             |            |            |  |         |                           |  |  |
|  | None  |             |            |            |  |         |                           |  |  |
|  | Test and Evaluation Property  |             |            |            |  |         |                           |  |  |
|  | None  |             |            |            |  |         |                           |  |  |
| Project 674882                                     |   |             |            |            | Page 20 of 21 Pages                      |         | Exhibit R-3 (PE 0305206F) |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  | DATE                                     |         | February 2000 |         |
|--|--|--|---------|---------------|---------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                      |         | PROJECT       |         |
| 07 - Operational System Development                |  | 0305206F Airborne Reconnaissance Systems |         | 674882        |         |
|  |  | Total Prior                              | Budget  | Budget        | Total   |
|  |  | to FY 1999                               | FY 1999 | FY 2000       | Program |
| Subtotals  |  | 0  | 0       | 0             | TBD     |
| Subtotal Product Development                       |  | 0  | 0       | 4,689         | TBD     |
| Subtotal Support and Management                    |  | 0  | 0       | 178           | TBD     |
| Subtotal Test and Evaluation                       |  | 0  | 0       | 0             | TBD     |
| Total Project                                      |  | 0  | 0       | 4,867         | TBD     |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |  |                                       |                  |                  |                  |                  |                  |                  |            | DATE | February 2000 |
|---|--|---------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                   |                  |                  |                  |                  |                  |                  |            |      |               |
| 07 - Operational System Development   |  | 0305207F Manned Reconnaissance System |                  |                  |                  |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)  | FY 1999 Actual   | FY 2000 Estimate                      | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost   | 53,479   | 23,798                                | 0                | 0                | 0                | 0                | 8,693            | Continuing       | TBD        |      |               |
| 674754 COBRA BALL   | 5,950  | 11,363                                | 0                | 0                | 0                | 0                | 8,693            | Continuing       | TBD        |      |               |
| 674820 Manned Reconnaissance Systems U-2  | 47,529   | 12,435                                | 0                | 0                | 0                | 0                | 0                | Continuing       | TBD        |      |               |
| Quantity of RDT&E Articles  | 1  | 0                                     | 0                | 0                | 0                | 0                | 0                | 0                | 0          |      |               |
| Funding for FY99-05 transferred to Air Force PE 0305207F from DARO Divestiture PE 0305207D. Funding for project 674820 in FY01-05 Transferred to PE 0305202F in FY01. |  |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
| (U)   | <b>A. Mission Description</b><br>The RDT&E portion of this PE supports development efforts required to enhance and sustain the U-2 and RC-135 reconnaissance aircraft. The RDT&E efforts in this PE focus on sensor and safety of flight projects. |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
| (U)   | <b>B. Budget Activity Justification</b><br>The program is categorized as Budget Activity 7 because it provided for development of technologies and capabilities in support of operational system development                                       |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
| (U)   | <b>C. Program Change Summary (\$ in Thousands)</b>   |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
| (U)   | Previous President's Budget (FY 2000 PBR)  | FY 1999                               | FY 2000          | FY 2001          | Total Cost       |                  |                  |                  |            |      |               |
| (U)   | Appropriated Value   | 44,241                                | 9,388            | 0                | TBD              |                  |                  |                  |            |      |               |
| (U)   | Adjustments to Appropriated Value  | 44,366                                | 24,388           |                  |                  |                  |                  |                  |            |      |               |
|   | a. Congressional/General Reductions  | -125                                  |                  |                  |                  |                  |                  |                  |            |      |               |
|   | b. Small Business Innovative Research  | 9,537                                 | -130             |                  |                  |                  |                  |                  |            |      |               |
|   | c. Omnibus or Other Above Threshold Reprogram  | -299                                  | -460             |                  |                  |                  |                  |                  |            |      |               |
|   | d. Below Threshold Reprogram   |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
|   | e. Rescissions   |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
|   | f. Other   |                                       |                  |                  |                  |                  |                  |                  |            |      |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |                                       |                  |                  | TBD              |                  |                  |                  |            |      |               |
| Exhibit R-2 (PE 0305207F)   |  |                                       |                  |                  |                  |                  |                  |                  |            |      |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  | DATE                                  | February 2000     |
|---|--|---------------------------------------|-------------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                   |                   |
| 07 - Operational System Development                 |  | 0305207F Manned Reconnaissance System |                   |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued  |                                       |                   |
| (U)   | Current Budget Submit/FY 2001 PBR  | FY 1999<br>53,479                     | FY 2000<br>23,798 |
| (U)   | Significant Program Changes:   |                                       |                   |
|   | FY99: DD1415 New Start notification for U2 Defensive Systems QRC approved by Congress. Funds reprogrammed from other AF sources to support this new start. |                                       |                   |
|   | FY01: U-2 Electronic Warfare System (EWS) reprogramming from RDT & E to Procurement (\$4.595M).  |                                       |                   |
|   |  | FY 2001<br>0                          | Total Cost<br>TBD |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                           |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
|--|---------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|---------------------------|--|-----|---------|--|-----|---------|------------------------------|-----|-------|---|-----|-------|---|-----|-------|--|-----|---------|---|-----|---------|-------|
| BUDGET ACTIVITY  |                           | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| 07 - Operational System Development  |                           | 0305207F Manned Reconnaissance System                                       |                  |                  |                  |                  |                  |                  |                  | 674754     |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
|  |                           | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| 674754   | COBRA BALL                | 5,950   | 11,363           | 0                | 0                | 0                | 0                | 8,693            | 0                | 30,801     |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| <p>(U) <b>A. Mission Description</b></p> <p>Laser Ranging and Imaging System (LRIS) -- This project supports design studies, engineering analysis, non-recurring engineering, and other efforts associated with modifications to the RC-135 or its mission systems. The results of these efforts provide the requisite engineering necessary to implement modifications or provide a preliminary assessment of the technical feasibility, operability, or general military utility of an application. FY99 funds (Congressional plus-up) continues the Laser Ranging and Imaging system for the COBRA Ball platform and includes system testing in Maui. This project has been called the Field Laser Demonstration (FLD) and the Advanced Airborne Sensor (AAS) in past budget documentation. FY05 funds air traffic control and navigational safety non-recurring engineering for the RC-135 fleet.</p> <p>Multi-Function Self-Aligned Gate Technology (MSAG) -- Congress supports the development of the multi-function self-aligned gate active aperture antenna (AAA) technology for use on Reconnaissance aircraft. This system will provide wide-band, duplex, communications links simultaneously to a ground unit, other aircraft, and a satellite surrogate. This electronically steered array is a cost-effective solution to numerous DoD requirements.</p> <p>On-Board Pre-Processing (OBPP) -- The prototype pre-processing effort will develop the capability to screen the data as close to the collection source as possible and advise analysts which data requires immediate expert human intervention. The effort involves the development of an electronic support system and software development.</p> <table border="0"> <tr> <td>(U)</td> <td>FY 1999 (\$ in Thousands)</td> <td></td> </tr> <tr> <td>(U)</td> <td>\$2,083</td> <td>Subsystem and system integration testing</td> </tr> <tr> <td>(U)</td> <td>\$1,000</td> <td>Design and fabricate systems</td> </tr> <tr> <td>(U)</td> <td>\$400</td> <td>Completed Range-in-a-Box fabrication and test</td> </tr> <tr> <td>(U)</td> <td>\$200</td> <td>Completed downselect of experimental aircraft and aircraft interface design</td> </tr> <tr> <td>(U)</td> <td>\$300</td> <td>Developed Maui interfaces, prepare and ship system</td> </tr> <tr> <td>(U)</td> <td>\$1,967</td> <td>Performed system performance characterization and demonstration testing</td> </tr> <tr> <td>(U)</td> <td>\$5,950</td> <td>Total</td> </tr> </table> |                           |   |                  |                  |                  |                  |                  |                  |                  |            | (U)           | FY 1999 (\$ in Thousands) |  | (U) | \$2,083 | Subsystem and system integration testing | (U) | \$1,000 | Design and fabricate systems | (U) | \$400 | Completed Range-in-a-Box fabrication and test | (U) | \$200 | Completed downselect of experimental aircraft and aircraft interface design | (U) | \$300 | Developed Maui interfaces, prepare and ship system | (U) | \$1,967 | Performed system performance characterization and demonstration testing | (U) | \$5,950 | Total |
| (U)  | FY 1999 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$2,083                   | Subsystem and system integration testing                                    |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$1,000                   | Design and fabricate systems  |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$400                     | Completed Range-in-a-Box fabrication and test                               |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$200                     | Completed downselect of experimental aircraft and aircraft interface design |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$300                     | Developed Maui interfaces, prepare and ship system                          |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$1,967                   | Performed system performance characterization and demonstration testing     |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |
| (U)  | \$5,950                   | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |                           |  |     |         |  |     |         |                              |     |       |   |     |       |   |     |       |  |     |         |   |     |         |       |

## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |  |          | DATE     | February 2000 |
|--|--|--|----------|----------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE  |          | PROJECT  |               |
| 07 - Operational System Development                  |  | 0305207F Manned Reconnaissance System  |          | 674754   |               |
| (U)  | A. Mission Description Continued   |  |          |          |               |
| (U)  | FY 2000 (\$ in Thousands)  |  |          |          |               |
| (U)  | \$4,000  | LRIS (Continuation of Congressionally directed and funded program)                   |          |          |               |
| (U)  | \$0  | - \$2,400 Field Testing (LRIS)   |          |          |               |
| (U)  | \$0  | - \$1,000 Integration of Acquisition Systems (LRIS)                                  |          |          |               |
| (U)  | \$0  | - \$600 System Modification (LRIS)   |          |          |               |
| (U)  | \$3,000  | Evaluate the MSAG AAA for use on the RC-135 as directed by Congress                  |          |          |               |
| (U)  | \$4,363  | On Board Preprocessor Prototype (OBPP - Congressionally added program)               |          |          |               |
| (U)  | \$0  | - \$2,000 Electronic Support System (Prototype Preprocessor - Congressionally added) |          |          |               |
| (U)  | \$0  | - \$2,363 Preprocessing Software Development (Prototype Preprocessor)                |          |          |               |
| (U)  | \$11,363   | Total  |          |          |               |
| (U)  | FY 2001 (\$ in Thousands)  |  |          |          |               |
| (U)  | \$0  | None. Prior year efforts reflect Congressionally added funding.                      |          |          |               |
| (U)  | \$0  | Total  |          |          |               |
| (U)  | B. Project Change Summary  |  |          |          |               |
|  | Added the Multi-Function Self-Aligned Gate Technology and On-Board Pre-Processing effort to FY00.  |  |          |          |               |
| (U)  | C. Other Program Funding Summary (\$ in Thousands)   |  |          |          |               |
|  | FY 1999  | FY 2000  | FY 2001  | FY 2002  | FY 2003       |
|  | Actual   | Estimate   | Estimate | Estimate | Estimate      |
| (U)  | APPN 10,APAF, Line 55  | 137,201  | 234,385  | 147,199  | 142,840       |
|  |  |  |          |          | 77,632        |
|  |  |  |          |          | 83,978        |
|  |  |  |          |          | Continuing    |
|  |  |  |          |          | Total Cost    |
| (U)  | D. Acquisition Strategy  |  |          |          |               |
|  | The RC-135 development and enhancement activities are managed by the Air Force through the BIG SAFARI program in the Reconnaissance System Program Office. These projects are managed by ASC/RA. ASC/RA provides technical oversight and management of all aircraft, ground and support system modifications, integration and flight test engineering responsibility, product assurance and acceptance testing, and logistics and training activities. |  |          |          |               |
| (U)  | E. Schedule Profile  |  |          |          |               |
|  |  | FY 1999  | FY 2000  | FY 2001  |               |
|  |  |  |          | FY 2000  |               |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |                                       |   |   |   |   | DATE    | February 2000 |         |
|--|---------------------------------------|---|---|---|---|---------|---------------|---------|
| BUDGET ACTIVITY                                      | PROJECT<br>674754                     |   |   |   |   |         |               |         |
|  | PE NUMBER AND TITLE                   |   |   |   |   |         |               |         |
|  | 0305207F Manned Reconnaissance System |   |   |   |   |         |               |         |
| (U) E. Schedule Profile Continued                    |                                       |   |   |   |   |         |               |         |
|  | FY 1999                               |   |   |   |   | FY 2000 |               | FY 2001 |
| 1 Preliminary Design Review (LRIS)                   | 2                                     | 3 | 4 | 1 | 2 | 3       | 4             | 1       |
| (U) Critical Design Review (LRIS)                    | *                                     |   |   |   |   |         |               |         |
| (U) Prototype Delivery (LRIS)                        | *                                     |   |   |   | X |         |               |         |
| (U) Engineering Analysis Report (MSAG)               |                                       |   |   |   |   |         |               | X       |
| (U) Electronic Support System (OBPP)                 |                                       |   |   |   |   |         |               | X       |
| (U) Software Prototype (OBPP)                        |                                       |   |   |   |   |         |               | X       |
| * - Denotes completed event                          |                                       |   |   |   |   |         |               |         |
| X - Denotes planned event                            |                                       |   |   |   |   |         |               |         |

Project 674754
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Exhibit R-2A (PE 0305207F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |                    |                        |                |                |                | DATE               | PROJECT |
|--|---|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|--------------------|---------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                     |                          |                         |                    |                        |                |                |                |                    |         |
| 07 - Operational System Development                |   | 0305207F Manned Reconnaissance System   |                          | February 2000           |                    |                        |                |                |                |                    |         |
|  |   |   |                          | 674754                  |                    |                        |                |                |                |                    |         |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |   |                          |                         |                    |                        |                |                |                |                    |         |
| (U)  | System Design and Analysis  |   |                          |                         |                    |                        |                |                |                |                    |         |
| (U)  | Fabrication and Test  |   |                          |                         |                    |                        |                |                |                |                    |         |
| (U)  | Integration and Support   |   |                          |                         |                    |                        |                |                |                |                    |         |
| (U)  | Total   |   |                          |                         |                    |                        |                |                |                |                    |         |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |   |                          |                         |                    |                        |                |                |                |                    |         |
| (U)  | <u>Performing Organizations:</u>  |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Contractor or Government  | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete |         |
|  | Product Development Organizations   |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | ASC/RAB   | Multiple                                | Aug 97                   | N/A                     | N/A                | 4,795                  | 5,950          | 11,363         | 8,693          | 30,801             |         |
|  | Support and Management Organizations  |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Test and Evaluation Organizations   |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Subtotals   |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Subtotal Product Development  |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Subtotal Support and Management   |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Subtotal Test and Evaluation  |   |                          |                         |                    |                        |                |                |                |                    |         |
|  | Total Project   |   |                          |                         |                    |                        |                |                |                |                    |         |

Project 674754

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Exhibit R-3 (PE 0305207F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)                 |   |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  |            | PROJECT       |
| 07 - Operational System Development                                  |   | 0305207F Manned Reconnaissance System  |                  |                  |                  |                  |                  |                  |                  |            | 674820        |
| COST (\$ in Thousands)   |   | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674820   | Manned Reconnaissance Systems U-2   | 47,529   | 12,435           | 0                | 0                | 0                | 0                | 0                | Continuing       | TBD        |               |
| (U)  | <b>A. Mission Description</b><br>This development project supports high payoff improvements for the U-2 Advanced Synthetic Aperture Radar System (ASARS-2) through the ASARS-2 Improvement Program (AIP). AIP improves area search, precision geolocation, and image quality characteristics sufficiently to directly support the targeting of precision guided munitions (PGMs). Complex imagery will be produced by the AIP system and support significant exploitation products for the imagery analysts. AIP champions the introduction of Asynchronous Transfer Mode (ATM) datalink formats to the ISR community and supports National Imagery Transmission Format (NITF) standards. Several Line Replaceable Units (LRU) including the Process Control Unit (PCU), Receiver - Exciter (RE), and transmitter are approaching the end of their supportability life. Developing new LRUs with next generation technology will make ASARS-2 supportable through the expected service life of the U-2 and provide capability enhancements necessary to support PGMs. Improvements to the ASARS-2 are directly transferable to Global Hawk High Altitude Endurance Unmanned Aerial Vehicles (HAE UAV) should migration of this improvement become a requirement. AIP incorporated interface to Dual Data Link II (DDL II) will provide an enhanced operational capability. Also, this project accomplishes the development of a quick reaction capability (QRC) to improve the U-2 electronic warfare system (EWS) capability for Southwest Asia. Lastly this project includes funds from FY99 congressional additions to develop cockpit display improvements, conduct risk reduction studies for aircraft fuel conversion and complete reliability and maintainability upgrades and initial spares procurement for the SENIOR GLASS system. |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| * FY99 is understated by 266K. BTR not reflected in ABIDES database. |   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$5,000   | Completed R&M upgrades and procures initial spares for SENIOR GLASS          |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$3,000   | Cockpit display improvements development                                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,250   | Risk reduction studies for fuels conversion to JP-8 from JP-TS               |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,300   | AIP Baseline Exploitation tools development                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$13,680  | Continued development of AIP on-board processor                              |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$620   | Flight test support  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$220   | SPO Support  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,120   | Post-processing Exploitation Tool Development (Super-Resolution, CCD, IFSAR) |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,500   | Continued Receiver-Exciter Controller development                            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$250   | Advanced data storage array development                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| Project 674820   |   | Page 7 of 12 Pages   |                  |                  |                  |                  |                  |                  |                  |            |               |
|  |   | Exhibit R-2A (PE 0305207F)   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |          | DATE  | February 2000              |
|---|----------|---|----------------------------|
| BUDGET ACTIVITY   |          | PE NUMBER AND TITLE   | PROJECT                    |
| 07 - Operational System Development   |          | 0305207F Manned Reconnaissance System                                   | 674820                     |
| (U) A. Mission Description Continued  |          |   |                            |
| (U) FY 1999 (\$ in Thousands) Continued   |          |   |                            |
| (U)   | \$4,352  | Continued development of AIP Range migration software                   |                            |
| (U)   | \$2,700  | Continued development of ASARS-2 Data Link                              |                            |
| (U)   | \$9,537  | U-2 QRC Defensive System Development                                    |                            |
| (U)   | \$47,529 | Total   |                            |
| (U) FY 2000 (\$ in Thousands)   |          |   |                            |
| (U)   | \$3,500  | Develop DDL II interface to AIP (Congressionally added effort)          |                            |
| (U)   | \$502    | Continued development of AIP on board processor                         |                            |
| (U)   | \$1,000  | Continued development of AIP Range migration software                   |                            |
| (U)   | \$4,850  | U-2 QRC Defensive System development                                    |                            |
| (U)   | \$1,172  | Common Exploitation Tools   |                            |
| (U)   | \$475    | SPO Support (AIP)   |                            |
| (U)   | \$636    | Begin Beyond Line of Sight (BLOS) data link interface integration (AIP) |                            |
| (U)   | \$225    | Begin Radar Transmitter Development (AIP)                               |                            |
| (U)   | \$75     | Develop AIP employment concept scenarios                                |                            |
| (U)   | \$12,435 | Total   |                            |
| (U) FY 2001 (\$ in Thousands)   |          |   |                            |
| (U)   | \$0      | Funding transferred to PE 0305202F                                      |                            |
| (U)   | \$0      | Total   |                            |
| (U) B. Project Change Summary   |          |   |                            |
| FY99 Congressional adds: AIP (\$9.0M), SENIOR GLASS (\$5M), cockpit upgrade development (\$3M) and risk reduction for fuel conversion to JP-8 (\$3.6M). |          |   |                            |
| FY00 Congressional adds: Dual Data Link upgrade (\$3.5M)  |          |   |                            |
| FY01 U-2 EWS QRC reprogrammed from RDT & E to procurement to meet higher priority AF and Theater requirements (\$4.595M).                               |          |   |                            |
| Project 674820  |          | Page 8 of 12 Pages  | Exhibit R-2A (PE 0305207F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |                                       |          |                            |          |               |          |          |            |
|--|---|---------------------------------------|----------|----------------------------|----------|---------------|----------|----------|------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE                   |          | DATE                       |          | February 2000 |          |          |            |
| 07 - Operational System Development                  |   | 0305207F Manned Reconnaissance System |          |                            |          | PROJECT       |          |          |            |
|  |   |                                       |          |                            |          | 674820        |          |          |            |
| (U)  | C. Other Program Funding Summary (\$ in Thousands)  |                                       |          |                            |          |               |          |          |            |
|  |   | FY 1999                               | FY 2000  | FY 2001                    | FY 2002  | FY 2003       | FY 2004  | FY 2005  | Total Cost |
|  |   | Actual                                | Estimate | Estimate                   | Estimate | Estimate      | Estimate | Estimate | Complete   |
| (U)  | AF RDT&E PE 0305202 AIP   | 0                                     | 0        | 27,546                     | 24,118   | 8,224         | 1,936    | 1,931    | Continuing |
| (U)  | AIP Production* (APAF**)  | 39,364                                | 15,312   | 0                          | 0        | 0             | 0        | 0        | Continuing |
| (U)  | PE 0305207  |                                       |          |                            |          |               |          |          | TBD        |
| (U)  | AIP Production PE 0305202   | 0                                     | 0        | 12,777                     | 18,659   | 15,380        | 6,066    | 4,016    | Continuing |
|  | * First Upgraded Radar Transmitter Deliveries in 3QFY03   |                                       |          |                            |          |               |          |          | TBD        |
|  | ** APAF production funding shown in PE 0305202F FY01-05   |                                       |          |                            |          |               |          |          | TBD        |
| (U)  | D. Acquisition Strategy   |                                       |          |                            |          |               |          |          |            |
|  | For airborne collection capability upgrades, modify existing platform and associated ground control equipment via Engineering Change Proposals (ECPs)/Task orders to existing USAF contracts. Develop an electronic defensive system QRC capability, then deploy and sustain on U-2 aircraft in Southwest Asia. For ASARS-2, develop and test new technology line replaceable units (LRUs) for subsequent retrofit into the U-2's, this may be performed during normal operations, U-2 Programmed Depot Maintenance (PDM), or during other ongoing U-2 modifications. |                                       |          |                            |          |               |          |          |            |
| (U)  | E. Schedule Profile   |                                       |          |                            |          |               |          |          |            |
|  |   |                                       |          | FY 1999                    | FY 2000  | FY 2001       |          |          |            |
|  |   | 1                                     | 2        | 3                          | 4        | 1             | 2        | 3        | 4          |
| (U)  | Production Critical Design Review   | *                                     |          |                            |          |               |          |          |            |
| (U)  | Test & Evaluation Milestones N/A  |                                       |          |                            |          |               |          |          |            |
| (U)  | -AIP Prototype Flight Test  |                                       |          | *                          |          |               |          |          |            |
| (U)  | -AIP Production Flight Test   |                                       |          |                            |          | *             |          |          |            |
| (U)  | AIP IOC   |                                       |          |                            |          |               | X        |          |            |
| (U)  | U-2 EWS QRC   |                                       |          |                            |          |               |          |          |            |
| (U)  | Engineering Milestones N/A  |                                       |          |                            |          |               |          |          |            |
| (U)  | -Contract Award   |                                       |          | *                          |          |               |          |          |            |
| (U)  | -SDR  |                                       |          |                            | *        |               |          |          |            |
| (U)  | -Critical Design Review   |                                       |          |                            |          |               |          |          |            |
| (U)  | -QRC Ground Test  |                                       |          |                            |          |               | X        |          | X          |
| (U)  | -QRC Flight Test  |                                       |          |                            |          |               |          |          | X          |
| (U)  | -QRC IOC  |                                       |          |                            |          |               |          |          |            |
| Project 674820                                       |   | Page 9 of 12 Pages                    |          | Exhibit R-2A (PE 0305207F) |          |               |          |          |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |              |   |   |   | DATE         | February 2000 |
|--|--|--------------|---|---|---|--------------|---------------|
| BUDGET ACTIVITY                                      | PE NUMBER AND TITLE                          |              |   |   |   |              | PROJECT       |
| <b>07 - Operational System Development</b>           | <b>0305207F Manned Reconnaissance System</b> |              |   |   |   |              | <b>674820</b> |
| (U) E. Schedule Profile Continued                    |  |              |   |   |   |              |               |
| (U) -AIP Interface with DDLII                        | 1  | FY 1999<br>2 | 3 | 4 | 1 | FY 2000<br>2 | FY 2001<br>3  |
| (U)  |  |              |   |   |   |              | X             |

\*. Denotes Completed Event  
X-Denotes planned event

Project 674820
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Exhibit R-2A (PE 0305207F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                       |                                      |             |            |            |                                       |        |               |   |            |
|--|--------------------------------------|-------------|------------|------------|---------------------------------------|--------|---------------|---|------------|
| BUDGET ACTIVITY  |                                      |             |            |            | DATE                                  |        | PROJECT       |   |            |
| 07 - Operational System Development                                      |                                      |             |            |            | 0305207F Manned Reconnaissance System |        | February 2000 |   |            |
| A. Project Cost Breakdown (\$ in Thousands)                              |                                      |             |            |            | FY 1999                               |        | FY 2000       |   |            |
| (U)  | Primary Hardware Development         |             |            |            | 30,683                                |        | 6,127         |   | 0          |
| (U)  | Software Development                 |             |            |            | 13,140                                |        | 5,093         |   | 0          |
| (U)  | Government Engineering Support       |             |            |            | 2,081                                 |        | 400           |   | 0          |
| (U)  | System Testing                       |             |            |            | 1,625                                 |        | 815           |   | 0          |
| (U)  | Total                                |             |            |            | 47,529                                |        | 12,435        |   | 0          |
| B. Budget Acquisition History and Planning Information (\$ in Thousands) |                                      |             |            |            |                                       |        |               |   |            |
| (U)  | Performing Organizations:            |             |            |            |                                       |        |               |   |            |
|  | Contractor or                        | Contract    |            |            |                                       |        |               |   |            |
|  | Government                           | Method/Type | Award or   | Performing | Project                               |        |               |   |            |
|  | Performing                           | or Funding  | Obligation | Activity   | Office                                |        |               |   |            |
|  | Activity                             | Vehicle     | Date       | EAC        | EAC                                   |        |               |   |            |
|  | Product Development Organizations    |             |            |            |                                       |        |               |   |            |
|  | Raytheon (AIP & SENIOR               | CPIF        | 3Q96       | N/A        | 0                                     | 30,081 | 6,726         | 0 | Continuing |
|  | GLASS)                               |             |            |            |                                       |        |               |   | TBD        |
|  | L3Comm (AIP)                         | CPIF        | 3Q96       |            | 0                                     | 2,766  |               | 0 | 2,766      |
|  | Cockpit                              |             |            |            |                                       | 3,000  | 0             | 0 | 3,000      |
|  | Fuel Conversion                      |             |            |            |                                       | 1,300  | 0             | 0 | 1,300      |
|  | QRC                                  |             |            |            |                                       | 9,537  | 5,100         |   | 14,637     |
|  | Support and Management Organizations |             |            |            |                                       |        |               |   |            |
|  | ASC/RAP/AFRL                         |             |            |            | 0                                     | 220    | 330           | 0 | 550        |
|  | Test and Evaluation Organizations    |             |            |            |                                       |        |               |   |            |
|  | WR-ALC/LR - Site 2,                  |             |            |            | 0                                     | 625    | 279           | 0 | 904        |
|  | Edwards AFB                          |             |            |            |                                       |        |               |   |            |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  | DATE                                  | February 2000      |
|--|--|---------------------------------------|--------------------|
| BUDGET ACTIVITY                                    |  | PROJECT                               |                    |
| 07 - Operational System Development                |  | 0305207F Manned Reconnaissance System |                    |
| PE NUMBER AND TITLE                                |  | 674820                                |                    |
|  |  | Total Prior to FY 1999                | Budget FY 1999     |
|  |  |                                       | Budget FY 2000     |
|  |  |                                       | Budget FY 2001     |
|  |  |                                       | Budget to Complete |
|  |  |                                       | Total Program      |
| Subtotals  |  | 0                                     | 0                  |
| Subtotal Product Development                       |  | 46,684                                | 11,826             |
| Subtotal Support and Management                    |  | 0                                     | 330                |
| Subtotal Test and Evaluation                       |  | 0                                     | 279                |
| Total Project                                      |  | 0                                     | 12,435             |
|  |  |                                       | 0                  |
|  |  |                                       | TBD                |
|  |  |                                       | 550                |
|  |  |                                       | 904                |
|  |  |                                       | TBD                |

UNCLASSIFIED

PE NUMBER: 0305208F

UNCLASSIFIED

PE TITLE: Distributed Common Ground Systems

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                        |                  |                  |                  |                  |                  |                  |                  |            |               |
| 07 - Operational System Development                 |   | 0305208F Distributed Common Ground Systems |                  |                  |                  |                  |                  |                  |                  |            |               |
|   | COST (\$ in Thousands)  | FY 1999 Actual                             | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
|   | Total Program Element (PE) Cost   | 20,602                                     | 24,205           | 21,330           | 15,146           | 21,009           | 16,280           | 14,939           | Continuing       | TBD        |               |
| 674821  | Distributed Common Ground System Interoperability   | 2,242                                      | 1,592            | 1,593            | 1,609            | 1,658            | 1,695            | 1,732            | Continuing       | TBD        |               |
| 674826  | Common Imagery Ground / Surface Systems   | 18,360                                     | 22,613           | 19,737           | 13,537           | 19,351           | 14,585           | 13,207           | Continuing       | TBD        |               |
|   | Quantity of RDT&E Articles  | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          | 0             |
| (U)   | <b>A. Mission Description</b><br>The Distributed Common Ground System (DCGS) Program is a cooperative effort between the services and agencies to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms, and commercial sources. The DCGS program is developing a family of systems capable of supporting all levels of conflict, interoperable (using the Common Data Link) with reconnaissance platforms and sensors, and integrated into the Joint Command, Control, Communication, Computer and Intelligence (C4I) environment. The program integrates architectures and standards from Common Imagery Ground/Surface Systems (CIGSS) for Imagery Intelligence (IMINT); Joint Interoperable Operator Network (JION) for Signal Intelligence (SIGINT); and Joint Airborne Measurement and Signature Intelligence (MASINT) Architecture (JAMA) for MASINT. |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>B. Budget Activity Justification</b><br>Program is in Budget Activity 7 because it provides for development of technologies and capabilities in support of operational system development.   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>C. Program Change Summary (\$ in Thousands)</b>  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | Previous President's Budget (FY 2000 PBR)   |  |                  | FY 1999          | FY 2000          | FY 2001          |                  |                  |                  | Total Cost |               |
| (U)   | Appropriated Value  |  |                  | 20,906           | 12,820           | 14,018           |                  |                  |                  | TBD        |               |
| (U)   | Adjustments to Appropriated Value   |  |                  | 21,159           | 24,820           |                  |                  |                  |                  |            |               |
| (U)   | a. Congressional/General Reductions   |  |                  | -253             |                  |                  |                  |                  |                  |            |               |
| (U)   | b. Small Business Innovative Research   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | c. Omnibus or Other Above Threshold Reprogram   |  |                  |                  | -133             |                  |                  |                  |                  |            |               |
| (U)   | d. Below Threshold Reprogram  |  |                  | -189             |                  |                  |                  |                  |                  |            |               |
| (U)   | e. Rescissions  |  |                  | -115             | -482             |                  |                  |                  |                  |            |               |

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Exhibit R-2 (PE 0305208F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |   |         |               |                   |
|---|---|---|---------|---------------|-------------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                               | DATE    | February 2000 |                   |
| <b>07 - Operational System Development</b>          |   | <b>0305208F Distributed Common Ground Systems</b> |         |               |                   |
| (U)   | C. Program Change Summary (\$ in Thousands) Continued                   |   |         |               | Total Cost<br>TBD |
| f. Other  |   | FY 1999   | FY 2000 | FY 2001       |                   |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR                           |   |         | 7,312         | TBD               |
| (U)   | Current Budget Submit/FY 2001 PBR                                       | 20,602  | 24,205  | 21,330        |                   |
| (U)   | Significant Program Changes:  |   |         |               |                   |
|   | - Congress added \$12M in FY00 for Eagle Vision                         |   |         |               |                   |
|   | - USAF added \$21.5M in the FY01-05 budget for Common Imagery Processor |   |         |               |                   |

Page 2 of 11 Pages      Exhibit R-2 (PE 0305208F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   | DATE  |                  | February 2000    |                  |                  |                  |                  |                  |            |
|--|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY  |   | PROJECT   |                  |                  |                  |                  |                  |                  |                  |            |
| 07 - Operational System Development  |   | 0305208F Distributed Common Ground Systems 674821 |                  |                  |                  |                  |                  |                  |                  |            |
| PE NUMBER AND TITLE  |   | 0305208F Distributed Common Ground Systems        |                  |                  |                  |                  |                  |                  |                  |            |
| COST (\$ in Thousands)   |   | FY 1999 Actual                                    | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
| 674821   | Distributed Common Ground System Interoperability | 2,242   | 1,592            | 1,593            | 1,609            | 1,658            | 1,695            | 1,732            | Continuing       | TBD        |
| <p><b>(U) A. Mission Description</b></p> <p>The Distributed Common Ground System (DCGS) Program is a cooperative effort between the services and agencies to provide systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms, and commercial sources. The DCGS program is developing a family of systems capable of supporting all levels of conflict, interoperable (using the Common Data Link) with reconnaissance platforms and sensors, and integrated into the Joint C4I environment. The interoperability program integrates architectures and standards from Common Imagery Ground/Surface Systems (CIGSS) for IMINT; Joint Interoperable Operator Network (JION) for SIGINT; and Joint Airborne MASINT Architecture (JAMA) for MASINT.</p> <p>(U) FY 1999 (\$ in Thousands)</p> <p>(U) \$1,654 Continued evolving DCGS architectures and standards for commonality and interoperability across intelligence disciplines.</p> <p>(U) \$338 Continued engineering development of NATO interoperability standards.</p> <p>(U) \$250 Managed DCGS Infrastructure Integrated Product Team (IPT) for ASD/C3I.</p> <p>(U) \$2,242 Total</p> <p>(U) FY 2000 (\$ in Thousands)</p> <p>(U) \$1,092 Continue evolving DCGS architectures and standards for commonality and interoperability across intelligence disciplines.</p> <p>(U) \$250 Continue engineering development of NATO interoperability standards.</p> <p>(U) \$250 Manage DCGS Infrastructure Integrated Product Team (IPT) for ASD/C3I.</p> <p>(U) \$1,592 Total</p> <p>(U) FY 2001 (\$ in Thousands)</p> <p>(U) \$1,093 Continue evolving DCGS architectures and standards for commonality and interoperability across intelligence disciplines.</p> <p>(U) \$250 Continue engineering development of NATO interoperability standards.</p> <p>(U) \$250 Manage DCGS Infrastructure IPT for ASD/C3I.</p> <p>(U) \$1,593 Total</p> <p><b>(U) B. Project Change Summary</b></p> |   |   |                  |                  |                  |                  |                  |                  |                  |            |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |             |            |            |               |         |         |         |         |
|--|---|-------------|------------|------------|---------------|---------|---------|---------|---------|
| BUDGET ACTIVITY                                    |   |             |            |            | DATE          |         | PROJECT |         |         |
| 07 - Operational System Development                |   |             |            |            | February 2000 |         | 674821  |         |         |
| 0305208F Distributed Common Ground Systems         |   |             |            |            |               |         |         |         |         |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |             |            |            |               |         |         |         |         |
| (U)  | Program Management  |             |            |            | FY 1999       | FY 2000 | FY 2001 |         |         |
| (U)  | System Engineering - Architectures and Interoperability                         |             |            |            | 200           | 200     | 200     |         |         |
| (U)  | Total   |             |            |            | 2,042         | 1,392   | 1,393   |         |         |
| (U)  |   |             |            |            | 2,242         | 1,592   | 1,593   |         |         |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |             |            |            |               |         |         |         |         |
| (U)  | <u>Performing Organizations:</u>  |             |            |            |               |         |         |         |         |
|  | Contractor or   | Contract    |            |            |               |         |         |         |         |
|  | Government  | Method/Type | Award or   | Performing | Project       |         |         |         |         |
|  | Activity  | or Funding  | Obligation | Activity   | Office        |         |         |         |         |
|  |   | Vehicle     | Date       | EAC        | EAC           |         |         |         |         |
|  | <u>Product Development Organizations</u>  |             |            |            |               |         |         |         |         |
|  | MITRE   | SS,FFP      | 2Q99       | N/A        | N/A           | 550     | 400     | 400     | TBD     |
|  | SAIC  | SS,IDIQ     | 2Q99       | N/A        | N/A           | 700     | 599     | 493     | TBD     |
|  | MRJ   | SS,FFP      | 2Q99       | N/A        | N/A           | 300     | 250     | 250     | TBD     |
|  | Other Non-Prime Gov't   | Multiple    | 2Q99       | N/A        | N/A           | 492     | 143     | 250     | TBD     |
|  | <u>Contracts</u>  |             |            |            |               |         |         |         |         |
|  | <u>Support and Management Organizations</u>                                     |             |            |            |               |         |         |         |         |
|  | SAIC  | SS,IDIQ     | 2Q99       | N/A        | N/A           | 200     | 200     | 200     | TBD     |
|  | <u>Test and Evaluation Organizations</u>  |             |            |            |               |         |         |         |         |
|  | <u>Subtotals</u>  |             |            |            |               |         |         |         |         |
|  | Subtotal Product Development  |             |            |            | Total Prior   | Budget  | Budget  | Budget  | Total   |
|  | Subtotal Support and Management   |             |            |            | to FY 1999    | FY 1999 | FY 2000 | FY 2001 | Program |
|  | Subtotal Test and Evaluation  |             |            |            | 0             | 2,042   | 1,392   | 1,393   | TBD     |
|  | Total Project   |             |            |            | 0             | 200     | 200     | 200     | TBD     |
|  |   |             |            |            | 0             | 2,242   | 1,592   | 1,593   | TBD     |

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Exhibit R-3 (PE 0305208F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   |   |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|---|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY   |   | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT                    |               |
| 07 - Operational System Development   |   | 0305208F Distributed Common Ground Systems  |                  |                  |                  |                  |                  |                  |                  | 674826                     |               |
| COST (\$ in Thousands)  |   | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| 674826  | Common Imagery Ground / Surface Systems | 18,360  | 22,613           | 19,737           | 13,537           | 19,351           | 14,585           | 13,207           | Continuing       | TBD                        |               |
| <p>(U) <b>A. Mission Description</b></p> <p>DCGS provides systems capable of receiving, processing, exploiting, and disseminating data from airborne and national reconnaissance platforms, and commercial sources. DCGS is a system of systems that does not need to be collocated but must be interconnected by a robust communications structure to provide data streams between intelligence collector, exploiters, producers, disseminators, and users. DCGS has four core locations: two CONUS based and two OCONUS. Other DCGS systems are distributed among Air Force operational units at numbered Air Force level, to support the Joint Task Force commander and the Air Operations Center. The CONUS based systems are deployable and capable of reachback operations via satellite. Eagle Vision is a deployable ground station for programming and collecting panchromatic, multispectral, and synthetic aperture radar broad-area imagery from commercial earth remote sensing satellites and processing/merging it with national imagery for mission planning, topographic analysis, and intelligence-gathering purposes. The AF has an operational Eagle Vision system at Ramstein AFB, GE. The Reno ANGB, NV National Eagle (commercial imagery post processing capability) is being upgraded with direct downlink capability along with direct downlink being procured for South Carolina ANG. Reno ANGB, NV also has a processing and exploitation system (networked with other DCGS sites) that supports the Theater Airborne Reconnaissance System (TARS) in addition to other DCGS missions.</p> <p>A mobile CIGSS/DCGS testbed is used by Program Offices to test interfaces with new sensors, applications, and other modifications, and to support the integration and test of DCGS components prior to introduction into the operational environment.</p> <p>The Common Imagery Processor (CIP) is a major interoperability initiative to develop a common sensor processing element within CIGSS architecture. The function of the CIP is to accept airborne imagery data, process it into an exploitable image, and output the image to other elements within CIGSS. Baseline capability includes F/A-18 and U-2 sensors. Efforts are underway to augment the CIP baseline to process data from upgraded/ new sensors and to investigate CIP as a multi-intelligence processor.</p> |   |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)   | FY 1999 (\$ in Thousands)               |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)   | \$6,470                                 | Continued CIGSS/DCGS sustaining engineering to implement software upgrades and enhancements to maintain compatibility with changing national and tactical interfaces. Completes JSIPS Block III upgrade (national DTS). |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)   | \$2,500                                 | Continued CIGSS/DCGS testbed development.   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)   | \$2,572                                 | Continued system engineering and technical support.   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)   | \$1,450                                 | Continued USMC Tactical Exploitation Group (TEG) development efforts.   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Project 674826  |   | Page 6 of 11 Pages  |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305208F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |                                     |   | DATE                 | PROJECT |
|--|-------------------------------------|---|----------------------|---------|
| BUDGET ACTIVITY                                      |                                     | PE NUMBER AND TITLE   |                      |         |
| 07 - Operational System Development                  |                                     | 0305208F Distributed Common Ground Systems  | February 2000 674826 |         |
| (U)  | A. Mission Description Continued    |   |                      |         |
| (U)  | FY 1999 (\$ in Thousands) Continued |   |                      |         |
| (U)  | \$2,000                             | Continued sustaining engineering for commercial satellite imagery. Begin integration of 5 meter and prepare architecture for 1 meter commercial satellites.   |                      |         |
| (U)  | \$3,368                             | Continued evolving CIP to keep pace with new sensors and projected sensor modification programs.  |                      |         |
| (U)  | \$18,360                            | Total   |                      |         |
| (U)  | FY 2000 (\$ in Thousands)           |   |                      |         |
| (U)  | \$2,663                             | Continue CIGSS/DCGS sustaining engineering to implement software upgrades and enhancements to maintain compatibility with changing national and tactical interfaces.  |                      |         |
| (U)  | \$900                               | Continue CIGSS/DCGS testbed development.  |                      |         |
| (U)  | \$450                               | Continue system engineering and technical support.  |                      |         |
| (U)  | \$1,950                             | Continue to provide sustaining engineering for commercial satellite imagery to ensure operational usability. Continue integration of 5 m and architecture preparation for 1 meter commercial satellites.                                      |                      |         |
| (U)  | \$4,650                             | Continue evolving CIP to keep pace with new sensors and projected sensor modification programs. Investigate multi-int processing.   |                      |         |
| (U)  | \$12,000                            | Upgrade and procure Eagle Vision commercial imagery direct downlink capabilities. Integrate with National Eagle. (Congressional add to FY00)  |                      |         |
| (U)  | \$22,613                            | Total   |                      |         |
| (U)  | FY 2001 (\$ in Thousands)           |   |                      |         |
| (U)  | \$2,440                             | Continue CIGSS/DCGS sustaining engineering to implement software upgrades and enhancements to maintain compatibility with changing national/tactical interfaces and to increase interoperability with expanding ISR platform/sensor baseline. |                      |         |
| (U)  | \$1,500                             | Continue CIGSS/DCGS testbed development.  |                      |         |
| (U)  | \$360                               | Continue system engineering and technical support.  |                      |         |
| (U)  | \$1,950                             | Continue to provide sustaining engineering for commercial satellite imagery to ensure operational usability. Continue integration of new/upgraded commercial imaging satellites.  |                      |         |
| (U)  | \$13,487                            | Continue evolving CIP to keep pace with growing sensor baseline: new and upgraded sensors. Implement initial multi-int processing upgrades.   |                      |         |
| (U)  | \$19,737                            | Total   |                      |         |
| (U)  | B. Project Change Summary           |   |                      |         |

Project 674826

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Exhibit R-2A (PE 0305208F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)      |  |  |  |  |  |  |  |  |  | DATE    |  | February 2000 |  |
|---|--|--|--|--|--|--|--|--|--|---------|--|---------------|--|
| BUDGET ACTIVITY   |  |  |  |  | PE NUMBER AND TITLE                        |  |  |  |  | PROJECT |  |               |  |
| 07 - Operational System Development                       |  |  |  |  | 0305208F Distributed Common Ground Systems |  |  |  |  | 674826  |  |               |  |
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| <u>C. Other Program Funding Summary (\$ in Thousands)</u> |  |  |  |  |  |  |  |  |  |         |  |               |  |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   |              |   |   |   | DATE         | February 2000 |
|---|---|--------------|---|---|---|--------------|---------------|
| BUDGET ACTIVITY                                       | PE NUMBER AND TITLE                               |              |   |   |   |              | PROJECT       |
| <b>07 - Operational System Development</b>            | <b>0305208F Distributed Common Ground Systems</b> |              |   |   |   |              | <b>674826</b> |
| (U) <u>E. Schedule Profile Continued</u>              |   |              |   |   |   |              |               |
| *-. Denotes Completed Event / X-Denotes planned event | 1   | FY 1999<br>2 | 3 | 4 | 1 | FY 2000<br>2 | FY 2001<br>3  |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                   | DATE                      |                | PROJECT        |                |
|--|---|---|-------------------|---------------------------|----------------|----------------|----------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                               |                   | DATE                      |                | PROJECT        |                |
| <b>07 - Operational System Development</b>         |   | <b>0305208F Distributed Common Ground Systems</b> |                   | <b>February 2000</b>      |                | <b>674826</b>  |                |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                   |                           |                |                |                |
|  |   |   |                   | <u>FY 1999</u>            | <u>FY 2000</u> | <u>FY 2001</u> |                |
| (U)  | Hardware/Software Development   |   |                   | 4,343                     | 1,387          | 8,515          |                |
| (U)  | System Engineering  |   |                   | 8,367                     | 5,969          | 7,322          |                |
| (U)  | System Integration  |   |                   | 2,250                     | 13,657         | 1,800          |                |
| (U)  | Ancillary Hardware Development  |   |                   | 2,000                     | 600            | 1,100          |                |
| (U)  | Program Management  |   |                   | 1,400                     | 1,000          | 1,000          |                |
| (U)  | Total   |   |                   | 18,360                    | 22,613         | 19,737         |                |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                   |                           |                |                |                |
| (U)  | <b>Performing Organizations:</b>  |   |                   |                           |                |                |                |
|  | <u>Contractor or</u>  | <u>Contract</u>                                   | <u>Performing</u> | <u>Project</u>            | <u>Budget</u>  | <u>Budget</u>  | <u>Total</u>   |
|  | <u>Government</u>   | <u>Method/Type</u>                                | <u>Activity</u>   | <u>Office</u>             | <u>FY 1999</u> | <u>FY 2000</u> | <u>Program</u> |
|  | <u>Activity</u>   | <u>or Funding</u>                                 | <u>EAC</u>        | <u>EAC</u>                |                |                |                |
|  | <u>Vehicle</u>  | <u>Date</u>                                       |                   |                           |                |                |                |
|  | <u>Product Development Organizations</u>  |   |                   |                           |                |                |                |
|  | Raytheon, Garland, TX   | Multiple  | N/A               | N/A                       | 0              | 500            | TBD            |
|  | Northrop Grumman, C, CPFF   | 2Q99  | N/A               | N/A                       | 0              | 4,896          | TBD            |
|  | Baltimore, MD   | 2Q99  | N/A               | N/A                       | 0              | 300            | TBD            |
|  | Lockheed Martin, San Jose, CA   | Multiple  | N/A               | N/A                       | 0              | 1,069          | TBD            |
|  | TBD for DCGS Upgrades and TBD Migration   | TBD   | N/A               | N/A                       | 0              | 1,384          | TBD            |
|  | Matra, Velizy, FR   | Multiple  | N/A               | N/A                       | 0              | 11,886         | TBD            |
|  | Matra   | SS, TBD   | N/A               | N/A                       | 0              | 1,122          | TBD            |
|  | Other Non-Prime Gov't   | TBD   | N/A               | N/A                       | 0              | 2,572          | TBD            |
|  | Contracts   |   | N/A               | N/A                       | 0              | 2,125          | TBD            |
|  | MITRE   | SS, IDIQ  | N/A               | N/A                       | 0              | 566            | TBD            |
|  | SAIC  | SS, IDIQ  | N/A               | N/A                       | 0              | 1,100          | TBD            |
| Project 674826                                     |   | Page 10 of 11 Pages                               |                   | Exhibit R-3 (PE 0305208F) |                |                |                |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |     |   |                        |                | DATE           | February 2000  | PROJECT            |
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| BUDGET ACTIVITY                                    |     | PE NUMBER AND TITLE                               |                        |                |                |                |                    |
| <b>07 - Operational System Development</b>         |     | <b>0305208F Distributed Common Ground Systems</b> |                        | <b>674826</b>  |                |                |                    |
| (U) <u>Performing Organizations Continued:</u>     |     |   |                        |                |                |                |                    |
| Support and Management Organizations               |     |   |                        |                |                |                |                    |
| Other Non-Prime Gov't                              | TBD | N/A   | 0                      | 1,400          | 1,000          | Continuing     | TBD                |
| Contracts  |     |   |                        |                |                |                |                    |
| Test and Evaluation Organizations                  |     |   |                        |                |                |                |                    |
| Subtotals  |     |   | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete |
| Subtotal Product Development                       |     |   | 0                      | 16,960         | 21,613         | 18,737         | TBD                |
| Subtotal Support and Management                    |     |   | 0                      | 1,400          | 1,000          | 1,000          | TBD                |
| Subtotal Test and Evaluation                       |     |   | 0                      | 18,360         | 22,613         | 19,737         | TBD                |
| Total Project                                      |     |   |                        |                |                |                |                    |

Project 674826

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                |                  |                  |                  |                  |                  |                  |                  |            | DATE                         | February 2000 |
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| BUDGET ACTIVITY                                     |                |                  |                  |                  |                  |                  |                  |                  |            | PE NUMBER AND TITLE          |               |
| 07 - Operational System Development                 |                |                  |                  |                  |                  |                  |                  |                  |            | 0305906F NCMC - TW/AA System |               |
| COST (\$ in Thousands)                              | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |                              |               |
| Total Program Element (PE) Cost                     | 16,113         | 13,230           | 19,309           | 15,815           | 15,703           | 18,171           | 18,216           | 0                | TBD        |                              |               |
| 673880 CMU  | 105            | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 1,291,797  |                              |               |
| 673881 Integrated TW/AA                             | 15,089         | 4,465            | 4,136            | 3,669            | 3,677            | 3,750            | 3,825            | 0                | TBD        |                              |               |
| 674409 CMU Legacy Interface                         | 919            | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 47,451     |                              |               |
| 674806 N/UWSS NORAD/USSPACECOM Warfighting System   | 0              | 8,765            | 15,173           | 12,146           | 12,026           | 14,421           | 14,391           | 0                | TBD        |                              |               |
| Quantity of RDT&E Articles                          | 0              | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |                              |               |

(U) **A. Mission Description**

This program element funds the evolution of the Commander-in-Chief (CINC) North American Aerospace Defense Command (NORAD)/CINC US Space Command (USSPACECOM) Battle Management Command and Control (BMC2) systems and their supporting infrastructure into an integrated, flexible, interoperable, and more cost effective architecture. This integrated BMC2 system includes the Integrated Tactical Warning and Attack Assessment (ITW/AA) command and control systems delivered under the just completed Cheyenne Mountain Upgrade (CMU) program. The RDT&E primarily funds integration of these and other existing mission areas to provide a foundation for a fused battlespace picture for the CINC, plus required additional mission capability for the command and control of space forces so that USCINCSpace can better support theater warfighting CINCs.

This program element has four related projects: The first project, CMU, was completed in early FY99 with Full Operational Capability (FOC) declaration on 29 Oct 98, ahead of the Acquisition Program Baseline (APB) schedule. The second project, ITW/AA System Engineering, is the primary source for modernization planning, integration and architecture development of modifications, upgrades and new acquisitions into the larger BMC2 system. It also provides standardization and interoperability among ITW/AA systems, the integrated BMC2 system, and other program upgrades (e.g., Space Based Infrared Systems (SBIRS) integration, National Missile Defense, and other Force Enhancements and Space Control programs). The third project, CMU Legacy Interfaces, provided software development upgrades to post-IOC CMU subsystems and direct mission software support to meet operational needs (adapting development systems to accommodate evolving older systems) and was completed in FY99. The fourth project, the NORAD/USSPACECOM Warfighting Support System (N/UWSS), provides the means by which the CINC BMC2 'system of systems' will evolve to meet CINCNORAD/USCINCSpace's evolving mission requirements and achieve Defense Information Infrastructure Common

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                              | DATE    | February 2000 |
|--|------------------------------|---------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE          |         |               |
| 07 - Operational System Development  | 0305906F NCMC - TW/AA System |         |               |
| (U) <b>A. Mission Description Continued</b><br>Operating Environment (DII COE) compliance. This project is consistent with the Air Force Long Range Plan, Joint Vision 2010, and the Defense Planning Guidance. The Joint Requirements Oversight Council (JROC) approved the N/UWSS Mission Needs Statement (MNS) on 18 May 1998.  |                              |         |               |
| (U) <b>B. Budget Activity Justification</b><br>This program element is in Budget Activity 7, Operational System Development, because the projects in this program element support development acquisition programs or upgrades in support of operational systems.  |                              |         |               |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b>   |                              |         |               |
| (U) Previous President's Budget (FY 2000 PBR)  | FY 1999                      | FY 2000 | FY 2001       |
| (U) Appropriated Value   | 7,333                        | 16,408  | 19,481        |
| (U) Adjustments to Appropriated Value  | 7,878                        | 13,408  |               |
| a. Congressional/General Reductions  | -545                         | -1      |               |
| b. Small Business Innovative Research  | -227                         |         |               |
| c. Omnibus or Other Above Threshold Reprogram  | 8,000                        | -73     |               |
| d. Below Threshold Reprogram   | 1,097                        |         |               |
| e. Rescissions   | -90                          | -104    |               |
| f. Other   |                              |         |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |                              |         | TBD           |
| (U) Current Budget Submit/FY 2001 PBR  | 16,113                       | 13,230  | -172          |
|  |                              |         | 19,309        |
| (U) <b>Significant Program Changes:</b><br>FY99: \$8000 Y2K additional supplemental appropriation to support development of the Center for Y2K Strategic Stability (CY2KSS) identified as a new start under PE0308699F in FY00 PB documentation.<br>FY99 BTR: \$1,195 for Space Battle Manager Space Integration EFX 99 initiative and -\$98 to support higher AF priorities.<br>FY01: Adjustment funded other AF and DoD priorities |                              |         | TBD           |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |     |                              |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|-----|------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |     | PE NUMBER AND TITLE          |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |     | 0305906F NCMC - TW/AA System |                  |                  |                  |                  |                  |                  |                  | 673880     |               |
| COST (\$ in Thousands)   |     | FY 1999 Actual               | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 673880   | CMU | 105                          | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 1,291,797  |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The Cheyenne Mountain Upgrade (CMU) program met Joint Chiefs of Staff requirements to provide the National Command Authorities with timely, reliable, and unambiguous Integrated Tactical Warning and Attack Assessment (ITW/AA) data for force survival or retaliatory decisions in the face of air, space, or ballistic missile threats. The program provided: 1) survivable communications access for missile attack warnings; 2) integrated warning of ballistic missile, atmospheric, and space threats; 3) standard user displays and warning processing systems at selected command centers; 4) an austere alternate facility capable of early/trans-attack warning and peacetime backup to the Missile Warning Center at Cheyenne Mountain. The CMU program implemented an acquisition strategy that tested and delivered four phases of user capability. Phase 1 implemented the missile warning capability in Sept 1995. Phases 2 and 3 were completed in August 1996 and July 1997, respectively. The Integrated Mission testing was completed on 5 August 1998. Full Operational Capability (FOC) was declared on 29 Oct 98.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u></p> <p>(U) \$105 Completed CMU</p> <p>(U) \$105 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u></p> <p>(U) \$0 Not applicable</p> <p>(U) \$0 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$0 Not applicable</p> <p>(U) \$0 Total</p> <p>(U) <b>B. Project Change Summary</b></p> <p>No change.</p> |     |                              |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                              |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|--|--|------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE          |                  |                  |                  |                  |                  |                  | PROJECT          |                            |               |
| 07 - Operational System Development                  |  | 0305906F NCMC - TW/AA System |                  |                  |                  |                  |                  |                  | 673880           |                            |               |
| (U)  | C. Other Program Funding Summary (\$ in Thousands)   | FY 1999 Actual               | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| (U)  | Other APPN   |                              |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | Other Procurement (Electronics, telecommunications equipment, & spares)* PE0305906F                                      | 12,380                       | 10,534           | 17,484           | 15,435           | 14,508           | 14,818           | 15,083           | Continuing       |                            |               |
| (U)  | Operations & Maintenance (PE0305906F)<br>* Includes CMU and N/UWSS   | 84,319                       | 65,400           | 81,053           | 85,132           | 89,933           | 90,842           | 73,034           | Continuing       |                            |               |
| (U)  | D. Acquisition Strategy<br>All major contracts within this program element were awarded after full and open competition. |                              |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | E. Schedule Profile  |                              |                  |                  |                  |                  |                  |                  |                  |                            |               |
|  |  | FY 1999                      |                  | FY 2000          |                  | FY 2001          |                  |                  |                  |                            |               |
|  |  | 1                            | 2                | 3                | 4                | 1                | 2                | 3                | 4                |                            |               |
| (U)  | CMU FOC<br>* indicates completed task /X indicates scheduled task  | *                            |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Project 673880                                       |  |                              |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Page 4 of 20 Pages                                   |  |                              |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305906F) |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                       |   |             |            |         |             |         |         |         |           | DATE                         | February 2000 | PROJECT |
|--|---|-------------|------------|---------|-------------|---------|---------|---------|-----------|------------------------------|---------------|---------|
| BUDGET ACTIVITY  |   |             |            |         |             |         |         |         |           | PE NUMBER AND TITLE          |               |         |
| 07 - Operational System Development                                      |   |             |            |         |             |         |         |         |           | 0305906F NCMC - TW/AA System |               |         |
| A. Project Cost Breakdown (\$ in Thousands)                              |   |             |            |         |             |         |         |         |           | FY 1999                      | FY 2000       | FY 2001 |
| (U)  | SPO Support                                       |             |            |         |             |         |         |         |           |                              |               |         |
| (U)  | Information Technology Services Program Contracts |             |            |         |             |         |         |         |           | 56                           | 0             | 0       |
| (U)  | Program Support                                   |             |            |         |             |         |         |         |           | 49                           | 0             | 0       |
| (U)  | Total   |             |            |         |             |         |         |         |           | 105                          | 0             | 0       |
| B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |             |            |         |             |         |         |         |           |                              |               |         |
| (U)  | Performing Organizations:                         |             |            |         |             |         |         |         |           |                              |               |         |
|  | Contractor or                                     | Contract    | Performing | Project | Total Prior | Budget  | Budget  | Budget  | Budget to | Total                        |               |         |
|  | Government  | Method/Type | Activity   | Office  | to FY 1999  | FY 1999 | FY 2000 | FY 2001 | Complete  | Program                      |               |         |
|  | Performing  | Award or    | EAC        | EAC     |             |         |         |         |           |                              |               |         |
|  | Activity  | Vehicle     | Date       |         |             |         |         |         |           |                              |               |         |
| Product Development Organizations  |   |             |            |         |             |         |         |         |           |                              |               |         |
|  | Lockheed-Martin                                   | C/CPIF/AF   | Oct 91     | 271,814 | 271,814     | 0       | 0       | 0       | 0         | 271,814                      |               |         |
|  | CO Springs CO                                     |             |            |         |             |         |         |         |           |                              |               |         |
|  | E-Systems   | C/FPI/AF    | Aug 86     | 103,240 | 103,240     | 0       | 0       | 0       | 0         | 103,240                      |               |         |
|  | St Petersburg FL                                  |             |            |         |             |         |         |         |           |                              |               |         |
|  | TRW, Inc  | C/FPI/AF    | Jun 87     | 213,761 | 213,761     | 0       | 0       | 0       | 0         | 213,761                      |               |         |
|  | Carson CA   |             |            |         |             |         |         |         |           |                              |               |         |
|  | GTE   | C/CPIF/AF   | Jan 92     | 238,415 | 238,415     | 0       | 0       | 0       | 0         | 238,415                      |               |         |
|  | Needham Hgts MA                                   |             |            |         |             |         |         |         |           |                              |               |         |
|  | Lockheed-Martin                                   | SS/CPIF/AF  | Mar 93     | 120,018 | 120,018     | 0       | 0       | 0       | 0         | 120,018                      |               |         |
|  | CO Springs CO                                     |             |            |         |             |         |         |         |           |                              |               |         |
|  | DISA (Govt)                                       | PO          | Oct 93     | 9,152   | 9,152       | 0       | 0       | 0       | 0         | 9,152                        |               |         |
|  | Reston VA   |             |            |         |             |         |         |         |           |                              |               |         |
|  | KAMAN Sciences                                    | C/CPAF      | Aug 95     | 3,176   | 3,176       | 0       | 0       | 0       | 0         | 3,176                        |               |         |
|  | CO Springs CO                                     |             |            |         |             |         |         |         |           |                              |               |         |
|  | Misc  | Various     | Various    | 820     | 820         | 0       | 0       | 0       | 0         | 820                          |               |         |
| Project 673880   |   |             |            |         |             |         |         |         |           | Exhibit R-3 (PE 0305906F)    |               |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                              |          |             |         | DATE    | February 2000 |
|--|-------------|------------------------------|----------|-------------|---------|---------|---------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE          |          |             |         | PROJECT |               |
| 07 - Operational System Development                |             | 0305906F NCMC - TW/AA System |          |             |         | 673880  |               |
| (U) Performing Organizations Continued:            |             |                              |          |             |         |         |               |
| Support and Management Organizations               |             |                              |          |             |         |         |               |
| MITRE  | SS/PR       | Oct 95                       | N/A      | N/A         | 168,615 | 0       | 0             |
| TEMS/ITSP Contracts                                | C/PR        | Various                      | N/A      | N/A         | 72,966  | 56      | 0             |
| Program Support                                    | Various     | Various                      | N/A      | N/A         | 89,715  | 49      | 0             |
| Test and Evaluation Organizations                  |             |                              |          |             |         |         |               |
| None   |             |                              |          |             |         |         |               |
| (U) Government Furnished Property:                 |             |                              |          |             |         |         |               |
| Contract   |             |                              |          |             |         |         |               |
| Item   | Method/Type | Award or                     | Delivery | Total Prior | Budget  | Budget  | Budget to     |
| Description  | or Funding  | Obligation                   | Date     | to FY 1999  | FY 1999 | FY 2000 | Complete      |
| Product Development Property                       | Vehicle     | Date                         |          |             |         |         |               |
| None   |             |                              |          |             |         |         |               |
| Support and Management Property                    |             |                              |          |             |         |         |               |
| None   |             |                              |          |             |         |         |               |
| Test and Evaluation Property                       |             |                              |          |             |         |         |               |
| None   |             |                              |          |             |         |         |               |
| Subtotals  |             |                              |          |             |         |         |               |
| Subtotal Product Development                       |             |                              |          | Total Prior | Budget  | Budget  | Total         |
|  |             |                              |          | to FY 1999  | FY 1999 | FY 2000 | Program       |
|  |             |                              |          | 960,396     | 0       | 0       | 960,396       |
| Subtotal Support and Management                    |             |                              |          | 331,296     | 105     | 0       | 331,401       |
| Subtotal Test and Evaluation                       |             |                              |          |             |         |         |               |
| Total Project                                      |             |                              |          | 1,291,692   | 105     | 0       | 1,291,797     |

Project 673880

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Exhibit R-3 (PE 0305906F)

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Exhibit R-3 (PE 0305906F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                           |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                           | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                           | 0305906F NCMC - TW/AA System  |                  |                  |                  |                  |                  |                  |                  | 673881     |               |
|  |                           | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 673881   | Integrated TW/AA          | 15,089  | 4,465            | 4,136            | 3,669            | 3,677            | 3,750            | 3,825            | Continuing       | TBD        |               |
| <p><b>(U) A. Mission Description</b></p> <p>This project was established to integrate new acquisitions such as the Cheyenne Mountain Upgrade (CMU) program into the Integrated Tactical Warning and Attack Assessment (ITW/AA) network when it became apparent that such efforts could only be achieved through rigorous system-of-systems design and engineering analysis of all interfaces and relationships among the twenty-six systems of the network. The project provides interface analysis and disconnect resolution among the ITW/AA systems and future program upgrades (e.g., Space Based Infrared System (SBIRS) integration, National Missile Defense, and other Force Enhancement and Space Control programs). This project supports the high priority task of integrating modifications, upgrades and new acquisitions for the USCINCSpace fixed site Command and Control nodes (e.g., Cheyenne Mountain Operations Center &amp; Space Operations Center), component C2 nodes (14 AF Aerospace Operations Center, 20th AF Missile Operations Center) and the mobile C2 node. As USCINCSpace moves toward common infrastructures and open system platforms, this project will integrate those systems into the ITW/AA network through pre-planned vertical release upgrades. This project is the primary source for modernization planning, integration, and architecture development of modifications, upgrades and new acquisitions into the ITW/AA network. In FY99 \$8M plus-up funding under this PE was used to support development of the Center for Y2K Strategic Stability (CY2KSS) which was identified as a new start under PE0308699F in the FY00 President's Budget documentation.</p> |                           |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$3,361                   | Systems Engineering Integration Team (SEIT) and Future Plans merged into Integrated Systems Engineering (ISE), tasks include: transition space surveillance common user message traffic off AUTODIN onto new communication architecture; initial integration of new Clear radar sensor into the missile warning and space surveillance C2 nodes; initial upgrade of missile warning C2 nodes from SBIRS Increment I ground station consolidation; planning and integration activities supporting NMD's BMC3 CINC node in the ITW/AA network; and software vertical release planning |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$3,728                   | AF long range planning 'jump start' funding for Space Battle Manager (SBM) command and control prototyping, supports Expeditionary Force Experiment '99 (EFX 99)  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$8,000                   | Shared Early Warning System (SEWS) CY2KSS supplemental appropriation  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$15,089                  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |

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Exhibit R-2A (PE 0305906F)

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| BUDGET ACTIVITY   |  | RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |               | DATE                       | February 2000 |          |          |          |            |
|---|--|--|---------------|----------------------------|---------------|----------|----------|----------|------------|
|   |  | PE NUMBER AND TITLE  | PROJECT       |                            |               |          |          |          |            |
| <b>07 - Operational System Development</b>  |  | <b>0305906F NCMC - TW/AA System</b>  | <b>673881</b> |                            |               |          |          |          |            |
| (U)   | <b><u>A. Mission Description Continued</u></b>                   |  |               |                            |               |          |          |          |            |
| (U)   | <b><u>FY 2000 (\$ in Thousands)</u></b>                          |  |               |                            |               |          |          |          |            |
| (U)   | \$2,456  | Requirements, architecture, and planning for new and upgraded fixed and mobile C2 nodes and sensors including vertical release planning, communications architecture, technology roadmap, and information operations into the ITW/AA network (e.g. SBIRS and NMD). |               |                            |               |          |          |          |            |
| (U)   | \$1,116  | Systems engineering for new and upgraded fixed and mobile C2 nodes and sensors including integrated scheduling, AUTODIN-R program, SBIRS, and NMD.   |               |                            |               |          |          |          |            |
| (U)   | \$893  | Test planning, execution, and test safety for new and upgraded fixed and mobile C2 nodes and sensors including vertical releases, AUTODIN-R program, SBIRS, and NMD.   |               |                            |               |          |          |          |            |
| (U)   | \$4,465  | Total  |               |                            |               |          |          |          |            |
| (U)   | <b><u>FY 2001 (\$ in Thousands)</u></b>                          |  |               |                            |               |          |          |          |            |
| (U)   | \$1,861  | Requirements, architecture, and planning for new and upgraded fixed and mobile C2 nodes and sensors including vertical release planning, communications architecture, technology roadmap, and information operations into the ITW/AA network (e.g. SBIRS and NMD). |               |                            |               |          |          |          |            |
| (U)   | \$1,241  | Systems engineering for new and upgraded fixed and mobile C2 nodes and sensors including integrated scheduling, AUTODIN-R program, SBIRS, and NMD.   |               |                            |               |          |          |          |            |
| (U)   | \$1,034  | Test planning, execution, and test safety for new and upgraded fixed and mobile C2 nodes and sensors including vertical releases, AUTODIN-R program, SBIRS, and NMD.   |               |                            |               |          |          |          |            |
| (U)   | \$4,136  | Total  |               |                            |               |          |          |          |            |
| (U)   | <b><u>B. Project Change Summary</u></b>                          |  |               |                            |               |          |          |          |            |
| FY99: \$8000 Y2K additional supplemental appropriation to support development of the CY2KSS identified as a new start under PE0308699F in the FY00 President's Budget documentation. There have been a number of schedule changes which are reflected and explained in Section E. Schedule Profile. |  |  |               |                            |               |          |          |          |            |
| (U)   | <b><u>C. Other Program Funding Summary (\$ in Thousands)</u></b> |  |               |                            |               |          |          |          |            |
|   | FY 1999  | FY 2000  | FY 2001       | FY 2002                    | FY 2003       | FY 2004  | FY 2005  | Cost to  | Total Cost |
|   | Actual   | Estimate   | Estimate      | Estimate                   | Estimate      | Estimate | Estimate | Complete |            |
| (U)   | All other Appn shown in the CMU, Project 3880.                   |  |               |                            |               |          |          |          |            |
| (U)   | <b><u>D. Acquisition Strategy</u></b>                            |  |               |                            |               |          |          |          |            |
| All major contracts within this program element were awarded after full and open competition.   |  |  |               |                            |               |          |          |          |            |
| Project 673881  |  | Page 8 of 20 Pages   |               | Exhibit R-2A (PE 0305906F) |               |          |          |          |            |

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

## February 2000

PE NUMBER AND TITLE

**0305906F NCMC - TW/AA System**

**673881**

|   | FY 1999 |   |   |   | FY 2000 |   |   |   | FY 2001 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| (U) AUTODIN Transition completed                                |         |   |   |   |         |   |   |   |         |   |   |   |
| (U) SBIRS - ITW/AA Increment 1 completed                        | *       |   |   |   |         |   |   |   |         |   |   |   |
| (U) SBIRS - ITW/AA Increment 2 completion                       |         |   |   |   |         |   | X |   |         |   |   |   |
| (U) Complete Clear Radar Upgrade Integration                    |         |   |   |   |         |   |   |   | X       |   |   |   |
| (U) Start ITW/AA MPDS-R Legacy Comm Transition                  |         |   |   |   |         |   | X |   |         |   |   |   |
| (U) Start ITW/AA Space Defense Operations Center Re-Engineering |         |   |   | * |         |   |   |   |         |   |   |   |
| (U) Start NMD - BMC3 ITW/AA Integration                         |         |   |   | * |         |   |   |   |         |   |   |   |
| (U) ITW/AA Air Initiatives completed                            |         |   |   |   |         |   | X |   |         |   |   |   |
| (U) Pre-Planned ITW/AA Software Vertical Release Upgrades       |         | * |   | * |         | X |   | X |         | X |   | X |
| (U) HAVE STARE (FPS-129) Radar Integration completed            |         |   |   |   |         |   |   |   |         |   |   | X |

\* indicates task completed/X indicates scheduled task

- AUTODIN transition originally scheduled for completion Jan 00 delayed until May 00 (stage 1) for top priority space data users and (stage 2) for secondary customers coming on line throughout the remainder of the year.
- ITW/AA Processing Display System - Migration (PDS-M) dropped from list of projects when estimate exceeded available budget. Tasks being rolled into work to be awarded to the eventual ISC2 contractor in Aug 00.
- The HAVE STARE (FPS-129) Radar will not be a fully integrated element of the Missile Warning Space Surveillance System. The radar will only be integrated with the Space Control Center and the Alternate Space Control Center. HAVE STARE Radar Integration delayed one year due to radome blowing off (weather conditions this time of year in Norway preclude replacing the radome which still has to be manufactured).

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Exhibit R-2A (PE 0305906F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |  |                              |                         | DATE                 | PROJECT       |
|--|--|------------------------------|-------------------------|----------------------|---------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE          |                         |                      |               |
| 07 - Operational System Development  |  | 0305906F NCMC - TW/AA System |                         | February 2000 673881 |               |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |                              |                         |                      |               |
| (U)  | Major Contract Incremental Funding *                                     |                              | FY 1999                 | FY 2000              | FY 2001       |
| (U)  | Award/Performance Fee  |                              | 6,706                   | 0                    | 1,000         |
| (U)  | SPO Support  |                              | 142                     | 0                    | 0             |
| (U)  | MITRE  |                              | 4,282                   | 1,644                | 1,680         |
| (U)  | TEMS/ITSP Contracts  |                              | 1,921                   | 2,524                | 1,164         |
| (U)  | Program Support  |                              | 2,038                   | 297                  | 292           |
| (U)  | Total  |                              | 15,089                  | 4,465                | 4,136         |
| * \$IM in FY01 - As part of the Total System Performance Responsibility (TSPR) initiative (identified in the N/UWSS section D. Acquisition Strategy) some systems engineering effort formerly performed by FFRDC (MITRE) will be transitioned to the ISC2 contractor. The change in MITRE funding of \$3.052 in the Feb 99 R-3 to the current \$1.680 in this document reflects that transition in FY01. |  |                              |                         |                      |               |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |                              |                         |                      |               |
| (U)  | Performing Organizations:  |                              |                         |                      |               |
| Contractor or Government Performing Activity   | Contract Method/Type or Funding Vehicle                                  | Award or Obligation Date     | Performing Activity EAC | Project Office EAC   | Total Program |
| Product Development Organizations  |  |                              |                         |                      |               |
| DISA   | MIPR   | Apr 96                       | 1,328                   | 1,328                | 1,328         |
| Lockheed Martin  | C/CPIF/AF  | Jun 95                       | 6,390                   | 6,390                | 6,390         |
| Co Springs, CO   |  |                              |                         |                      |               |
| Lockheed Martin  | CPIF/AF  | Nov 98                       | 1,546                   | 2,561                | 2,561         |
| Sunnyvale, CA  |  |                              |                         |                      |               |
| SPAWAR/Navy  | MIPR   | Nov 98                       | 583                     | 1,132                | 1,435         |
| DTRA Dulles, VA  | MIPR   | Apr 99                       | N/A                     | N/A                  | 1,300         |
| ISC2 Contractor (TBD)  | CP/AF  | Oct 00                       | N/A                     | N/A                  | 1,000         |
| Prime Contractors (Various)  | Various  | Various                      | N/A                     | N/A                  | 1,552         |

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Exhibit R-3 (PE 0305906F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |            |          |             | DATE                         | PROJECT |                           |         |            |         |
|--|-------------|------------|----------|-------------|------------------------------|---------|---------------------------|---------|------------|---------|
| BUDGET ACTIVITY                                    |             |            |          |             |                              |         |                           |         |            |         |
| 07 - Operational System Development                |             |            |          |             | 0305906F NCMC - TW/AA System | 673881  |                           |         |            |         |
| <b>(U) Performing Organizations Continued:</b>     |             |            |          |             |                              |         |                           |         |            |         |
| Support and Management Organizations               |             |            |          |             |                              |         |                           |         |            |         |
| MITRE  | CPFF        | Oct 95     | N/A      | N/A         | 53,025                       | 4,282   | 1,644                     | 1,680   | Continuing | TBD     |
| TEMS/Information                                   | C/R         | Various    | N/A      | N/A         | 32,221                       | 1,921   | 2,524                     | 1,164   | Continuing | TBD     |
| Technology Services Program                        |             |            |          |             |                              |         |                           |         |            |         |
| Contracts  |             |            |          |             |                              |         |                           |         |            |         |
| Program Support                                    | N/A         | Nov 95     | N/A      | N/A         | 7,128                        | 2,038   | 297                       | 292     | Continuing | TBD     |
| Prime Contractors                                  | (Various)   |            |          |             | 812                          |         |                           |         |            | 812     |
| Test and Evaluation Organizations                  |             |            |          |             |                              |         |                           |         |            |         |
| None   |             |            |          |             |                              |         |                           |         |            |         |
| <b>(U) Government Furnished Property:</b>          |             |            |          |             |                              |         |                           |         |            |         |
| Contract   |             |            |          |             |                              |         |                           |         |            |         |
| Method/Type  |             |            |          |             |                              |         |                           |         |            |         |
| Award or   |             |            |          |             |                              |         |                           |         |            |         |
| Obligation   |             |            |          |             |                              |         |                           |         |            |         |
| Date   |             |            |          |             |                              |         |                           |         |            |         |
| Delivery   |             |            |          |             |                              |         |                           |         |            |         |
| Date   |             |            |          |             |                              |         |                           |         |            |         |
| Item   | Method/Type | Award or   | Delivery | Total Prior | Budget                       | Budget  | Budget                    | Budget  | Budget to  | Total   |
| Description  | or Funding  | Obligation | Date     | to FY 1999  | FY 1999                      | FY 2000 | FY 2001                   | FY 2001 | Complete   | Program |
| Vehicle  |             |            |          |             |                              |         |                           |         |            |         |
| Product Development Property                       |             |            |          |             |                              |         |                           |         |            |         |
| None   |             |            |          |             |                              |         |                           |         |            |         |
| Support and Management Property                    |             |            |          |             |                              |         |                           |         |            |         |
| None   |             |            |          |             |                              |         |                           |         |            |         |
| Test and Evaluation Property                       |             |            |          |             |                              |         |                           |         |            |         |
| None   |             |            |          |             |                              |         |                           |         |            |         |
| Subtotals  |             |            |          |             |                              |         |                           |         |            |         |
| Subtotal Product Development                       |             |            |          |             |                              |         |                           |         |            |         |
| Subtotal Support and Management                    |             |            |          |             |                              |         |                           |         |            |         |
| Subtotal Test and Evaluation                       |             |            |          |             |                              |         |                           |         |            |         |
| Total Project                                      |             |            |          |             |                              |         |                           |         |            |         |
|  |             |            |          | Total Prior | Budget                       | Budget  | Budget                    | Budget  | Budget to  | Total   |
|  |             |            |          | to FY 1999  | FY 1999                      | FY 2000 | FY 2001                   | FY 2001 | Complete   | Program |
|  |             |            |          | 7,718       | 6,848                        | 0       | 1,000                     | 0       | 0          | 15,566  |
|  |             |            |          | 93,186      | 8,241                        | 4,465   | 3,136                     | TBD     | TBD        | TBD     |
|  |             |            |          | 100,904     | 15,089                       | 4,465   | 4,136                     | TBD     | TBD        | TBD     |
| Project 673881                                     |             |            |          |             | Page 11 of 20 Pages          |         | Exhibit R-3 (PE 0305906F) |         |            |         |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                      |                              |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000  |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
|--|----------------------|------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|--|--|--|--|--|--|--|--|--|
| BUDGET ACTIVITY  |                      | PE NUMBER AND TITLE          |                  |                  |                  |                  |                  |                  |                  | PROJECT    |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| 07 - Operational System Development  |                      | 0305906F NCMC - TW/AA System |                  |                  |                  |                  |                  |                  |                  | 674409     |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| COST (\$ in Thousands)   |                      | FY 1999 Actual               | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| 674409   | CMU Legacy Interface | 919                          | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 47,451     |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>A. Mission Description</b><br/>           The FY95 Appropriations Conference Committee transferred \$41.5M from the O&amp;M Critical Space Contract Operations Line to the RDT&amp;E R-1 line in this program element. Congress realigned these funds from O&amp;M to RDT&amp;E to identify the costs associated with Cheyenne Mountain Upgrade (CMU) software development upgrades to the CMU program. To clearly account for this funding, this project, Legacy Interfaces, was established. This project provided funding for software development upgrades to the CMU program and for direct mission software support to meet operational needs and was completed in FY99.</p> |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>FY 1999 (\$ in Thousands)</b><br/>           (U) \$919 Provided Cheyenne Mountain software engineering support/upgrades<br/>           (U) \$919 Total</p>   |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>FY 2000 (\$ in Thousands)</b><br/>           (U) \$0 Not applicable<br/>           (U) \$0 Total</p>   |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>FY 2001 (\$ in Thousands)</b><br/>           (U) \$0 Not applicable<br/>           (U) \$0 Total</p>   |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>B. Project Change Summary</b><br/>           No changes</p>  |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>C. Other Program Funding Summary (\$ in Thousands)</b></p> <table border="1"> <thead> <tr> <th>FY 1999 Actual</th> <th>FY 2000 Estimate</th> <th>FY 2001 Estimate</th> <th>FY 2002 Estimate</th> <th>FY 2003 Estimate</th> <th>FY 2004 Estimate</th> <th>FY 2005 Estimate</th> <th>Cost to Complete</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>   |                      |                              |                  |                  |                  |                  |                  |                  |                  |            | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |  |  |  |  |  |  |  |  |  |
| FY 1999 Actual   | FY 2000 Estimate     | FY 2001 Estimate             | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost       |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
|  |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>(U) AF RDT&amp;E<br/>           (U) Other APPN<br/>           (U) All other Appns show in the CMU, project 3880</p>   |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |
| <p>Project 674409</p>  |                      |                              |                  |                  |                  |                  |                  |                  |                  |            |                |                  |                  |                  |                  |                  |                  |                  |            |  |  |  |  |  |  |  |  |  |

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Exhibit R-2A (PE 0305906F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |   |   |         |   |         |   |   |   | DATE | February 2000 |
|--|---|---|---|---------|---|---------|---|---|---|------|---------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE   |   |         |   | PROJECT |   |   |   |      |               |
| 07 - Operational System Development                  |   | 0305906F NCMC - TW/AA System  |   |         |   | 674409  |   |   |   |      |               |
| (U)  | <u>D. Acquisition Strategy</u>                      | All major contracts within this program element were awarded after full and open competition. |   |         |   |         |   |   |   |      |               |
| (U)  | <u>E. Schedule Profile</u>                          |   |   |         |   |         |   |   |   |      |               |
| (U)  | Cheyenne Mountain test/software support upgrades    |   |   |         |   |         |   |   |   |      |               |
|  | * indicates task completed/X indicates planned task |   |   |         |   |         |   |   |   |      |               |
|  |   | FY 1999   |   | FY 2000 |   | FY 2001 |   |   |   |      |               |
|  |   | 1   | 2 | 3       | 4 | 1       | 2 | 3 | 4 |      |               |
|  |   | *   |   |         |   |         |   |   |   |      |               |

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Exhibit R-2A (PE 0305906F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                              |                        |                |                           |                    |
|--|--|---|--------------------------|-------------------------|------------------------------|------------------------|----------------|---------------------------|--------------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         | DATE                         |                        | PROJECT        |                           |                    |
| 07 - Operational System Development                |  |   |                          |                         | 0305906F NCMC - TW/AA System |                        | February 2000  |                           |                    |
|  |  |   |                          |                         | 0305906F NCMC - TW/AA System |                        | 674409         |                           |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                              |                        |                |                           |                    |
| (U)  | SPO support  |   |                          |                         |                              |                        |                |                           |                    |
| (U)  | ITSP Contracts   |   |                          |                         |                              |                        |                |                           |                    |
| (U)  | Program Support  |   |                          |                         |                              |                        |                |                           |                    |
| (U)  | Total  |   |                          |                         |                              |                        |                |                           |                    |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                              |                        |                |                           |                    |
| (U)  | Performing Organizations:  |   |                          |                         |                              |                        |                |                           |                    |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC           | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000            | Budget to Complete |
|  | Product Development Organizations  |   |                          |                         |                              |                        |                |                           |                    |
|  | Lockheed-Martin  | CP/AF                                   | Oct 94                   | 9,352                   | 9,352                        | 9,352                  |                |                           |                    |
|  | CO Springs CO  |   |                          |                         |                              |                        |                |                           |                    |
|  | E-Systems  | FPIF/AF                                 | Oct 94                   | 1,880                   | 1,880                        | 1,880                  |                |                           |                    |
|  | St Petersburg FL   |   |                          |                         |                              |                        |                |                           |                    |
|  | Kaman Sciences   | CP/AF                                   | Oct 94                   | 18,214                  | 18,214                       | 18,214                 |                |                           |                    |
|  | CO Springs CO  |   |                          |                         |                              |                        |                |                           |                    |
|  | Kaman Sciences   | CP/AF                                   | Oct 94                   | 12,471                  | 12,471                       | 12,471                 |                |                           |                    |
|  | CO Springs CO  |   |                          |                         |                              |                        |                |                           |                    |
|  | Navy/NISE  | MIPR                                    | Sep 95                   | 3,244                   | 3,244                        | 3,244                  |                |                           |                    |
|  | Support and Management Organizations                                     |   |                          |                         |                              |                        |                |                           |                    |
|  | MITRE  | CPFF                                    | N/A                      | N/A                     | N/A                          | 1,102                  |                |                           |                    |
|  | TEMS/ITSP Contracts  | CPFF                                    | N/A                      | N/A                     | N/A                          | 261                    | 824            |                           |                    |
|  | Program Support  | N/A                                     | N/A                      | N/A                     | N/A                          | 8                      | 95             |                           |                    |
|  | Test and Evaluation Organizations  |   |                          |                         |                              |                        |                |                           |                    |
|  | None   |   |                          |                         |                              |                        |                |                           |                    |
| Project 674409                                     |  |   |                          |                         | Page 14 of 20 Pages          |                        |                | Exhibit R-3 (PE 0305906F) |                    |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                              |                |                | DATE           | February 2000 |
|--|--|------------------------------|----------------|----------------|----------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE          |                |                | PROJECT        |               |
| 07 - Operational System Development                |  | 0305906F NCMC - TW/AA System |                |                | 674409         |               |
| (U) Government Furnished Property:                 |  |                              |                |                |                |               |
| Contract   |  |                              |                |                |                |               |
|  |  | Method/Type                  | Award or       |                |                |               |
| Item   |  | or Funding                   | Obligation     | Delivery       |                |               |
| Description  |  | Vehicle                      | Date           | Date           |                |               |
| Product Development Property                       |  |                              |                |                |                |               |
| None   |  |                              |                |                |                |               |
| Support and Management Property                    |  |                              |                |                |                |               |
| None   |  |                              |                |                |                |               |
| Test and Evaluation Property                       |  |                              |                |                |                |               |
| None   |  |                              |                |                |                |               |
| Subtotals  |  |                              |                |                |                |               |
| Subtotal Product Development                       |  | Total Prior to FY 1999       | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Total Program |
|  |  | 45,161                       |                |                | 0              | 45,161        |
| Subtotal Support and Management                    |  | 1,371                        | 919            |                | 0              | 2,290         |
| Subtotal Test and Evaluation                       |  |                              |                |                |                |               |
| Total Project                                      |  | 46,532                       | 919            |                | 0              | 47,451        |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |  |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |  | 0305906F NCMC - TW/AA System  |                  |                  |                  |                  |                  |                  |                  | 674806     |               |
|  | COST (\$ in Thousands)                     | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674806   | N/UWSS NORAD/USSPACECOM Warfighting System | 0   | 8,765            | 15,173           | 12,146           | 12,026           | 14,421           | 14,391           | Continuing       | TBD        |               |
| <p><b>(U) A. Mission Description</b></p> <p>The NORAD/USSPACECOM Warfighting Support System (N/UWSS) provides the foundation for the future architecture for a NORAD/USSPACECOM Battle Management/C4I 'system of systems' that complies with the Defense Information Infrastructure Common Operating Environment (DII COE), Joint Technical Architecture (JTA) standards and provides for DoD/Joint C2 interoperability. New Space C2 capability will be integrated with this architecture and the evolving legacy mission capability to provide an integrated battlespace picture. N/UWSS scope addresses all Commander-in-Chief (CINC) North American Aerospace Defense Command (NORAD)/CINC US Space Command (USSPACECOM) functions including the Integrated Tactical Warning/Attack Assessment (ITW/AA) and Space Battle Management mission applications with automated decision aids. N/UWSS objectives are to provide NORAD/USSPACECOM a C2 system that is flexible in responding to evolving mission needs (e.g. Space Based Infrared System (SBIRS), National Missile Defense (NMD), Space Control, and Information Operations); is interoperable within the NORAD/USSPACECOM warfighting functions and supporting/supported CINCs; and achieves reductions in total cost of ownership.</p> <p>The initial scope of N/UWSS will put into place an architecture to support evolution of fixed and endurable C2 nodes to DII COE compliance and develop and integrate new Space C2 capability.</p> |  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)                  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0  | Not applicable  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)                  |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$888                                      | Enterprise infrastructure database development  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$743                                      | Fused battlespace situation monitor and assessment  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,228                                    | Command and Control (C2) of space forces/threat warning development                         |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$4,458                                    | C2 of space forces/space battle manager to provide theater situational awareness            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$448                                      | C2 of space forces/space operations planning and development of a Space Tasking Order (STO) |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$8,765                                    | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |

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Exhibit R-2A (PE 0305906F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                                     | DATE                       | February 2000 |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
|---|-------------------------------------|----------------------------|---------------|----------|----------|----------|----------|------------|---------|---------|---------|------------|--------|----------|----------|----------|----------|----------|----------|----------|--|--|--|--|--|--|--|--|--|--|---------|---------|---------|--|--|--|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                 | PROJECT                    |               |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
| <b>07 - Operational System Development</b>  | <b>0305906F NCMC - TW/AA System</b> | <b>674806</b>              |               |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
| <p>(U) <b>A. Mission Description Continued</b></p> <p>(U) <b>FY 2001 (\$ in Thousands)</b></p> <p>(U) \$3,319 Enterprise infrastructure database development</p> <p>(U) \$3,766 Fused battlespace picture situation monitor and assessment</p> <p>(U) \$2,442 C2 of space forces/threat warning development</p> <p>(U) \$3,936 C2 of space forces/space battle manager to provide theater situational awareness</p> <p>(U) \$1,710 C2 of space forces/space operations planning and development of a Space Tasking Order (STO)</p> <p>(U) \$15,173 Total</p> <p>(U) <b>B. Project Change Summary</b></p> <p>This project was a new start in FY00. There have been a number of schedule changes which are reflected and explained in Section E. Schedule Profile.</p> <p>(U) <b>C. Other Program Funding Summary (\$ in Thousands)</b></p> <table border="1"> <thead> <tr> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>FY 2004</th> <th>FY 2005</th> <th>Cost to</th> <th>Total Cost</th> </tr> <tr> <th>Actual</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Complete</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) Other APPN</p> <p>Other procurement funds shown in CMU: project 673880.</p> <p>(U) <b>D. Acquisition Strategy</b></p> <p>N/UWSS will employ an evolutionary spiral development acquisition strategy which enables rapid development and fielding of an initial capability in response to a validated requirement. Using a spiral development acquisition strategy is important in a hardware/software intensive C2 system where 18-24 month technology cycles are common.</p> <p>N/UWSS will utilize a performance-oriented contracting strategy with industry, evolving toward Total System Performance Responsibility (TSPR). All major contracts related to this project will be awarded after full and open competition.</p> <p>(U) <b>E. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                                     |                            |               | FY 1999  | FY 2000  | FY 2001  | FY 2002  | FY 2003    | FY 2004 | FY 2005 | Cost to | Total Cost | Actual | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete |  |  |  |  |  |  |  |  |  |  | FY 1999 | FY 2000 | FY 2001 |  |  |  |
| FY 1999   | FY 2000                             | FY 2001                    | FY 2002       | FY 2003  | FY 2004  | FY 2005  | Cost to  | Total Cost |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
| Actual  | Estimate                            | Estimate                   | Estimate      | Estimate | Estimate | Estimate | Complete |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
|   |                                     |                            |               |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
| FY 1999   | FY 2000                             | FY 2001                    |               |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
|   |                                     |                            |               |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |
| Project 674806  |                                     | Exhibit R-2A (PE 0305906F) |               |          |          |          |          |            |         |         |         |            |        |          |          |          |          |          |          |          |  |  |  |  |  |  |  |  |  |  |         |         |         |  |  |  |

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                              |   |   |   |   | DATE    | February 2000 |
|--|------------------------------|---|---|---|---|---------|---------------|
| BUDGET ACTIVITY  | PROJECT<br>674806            |   |   |   |   |         |               |
|  | PE NUMBER AND TITLE          |   |   |   |   |         |               |
| 07 - Operational System Development  | 0305906F NCMC - TW/AA System |   |   |   |   |         |               |
| (U) E. Schedule Profile Continued  |                              |   |   |   |   |         |               |
|  | FY 1999                      |   |   |   |   | FY 2000 | FY 2001       |
|  | 1                            | 2 | 3 | 4 | 1 | 2       | 3             |
| (U) Interim Integrated Space Command and Control (ISC2) Contract Award   |                              |   |   | * |   |         |               |
| (U) ISC2 Contract Award  |                              |   |   |   | X | X       |               |
| (U) C2 of Space Forces incremental delivery  |                              |   |   |   | X | X       |               |
| * Indicates task completion/X indicates scheduled task.  |                              |   |   |   |   |         |               |
| - ISC2 initial contract award will be in Feb 00 to two contractors followed by a rolling down select with final award in Aug 00 to one contractor.   |                              |   |   |   |   |         |               |
| - FY00 PB (Feb 99) schedule profile showed only one scheduled task (X) for ISC2 contract award because at that time ISC2 contract was to be a single source contract.  |                              |   |   |   |   |         |               |
| - ISC2 contract award slipped 3 months from FY00 PB (Feb 99) schedule profile. The draft RFP was released in Nov 99. The final RFP was held until critical processes (requirements, funding, test, training) could be worked and agreed to between AFSPC and PEO for C2 resulting in the delay of the final RFP release resulting in a concurrent slip to final award.   |                              |   |   |   |   |         |               |
| - Due to the delay of the ISC2 contract award, an interim contractor has been hired to begin the Space Battle Management Core System (SBMCS) work which results in the C2 of Space Forces incremental delivery beginning earlier on the schedule profile. The enterprise database and fused battlespace picture incremental delivery lines were then rolled into the C2 of space forces incremental delivery line in an effort to accurately portray deliveries of all space products. |                              |   |   |   |   |         |               |

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Exhibit R-2A (PE 0305906F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                              |                        |                |                |                            |
|--|--|---|--------------------------|-------------------------|------------------------------|------------------------|----------------|----------------|----------------------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         | DATE                         | PROJECT                |                |                |                            |
| 07 - Operational System Development                |  |   |                          |                         | PE NUMBER AND TITLE          | 674806                 |                |                |                            |
|  |  |   |                          |                         | 0305906F NCMC - TW/AA System |                        |                |                |                            |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                              |                        |                |                |                            |
|  |  |   |                          |                         | FY 1999                      | FY 2000                | FY 2001        |                |                            |
| (U)  | Major Contract   |   |                          |                         | 0                            | 5,460                  | 11,541         |                |                            |
| (U)  | Award/Performance Fee  |   |                          |                         | 0                            | 500                    | 1,731          |                |                            |
| (U)  | FFRDC  |   |                          |                         | 0                            | 1,440                  | 1,225          |                |                            |
| (U)  | A&AS   |   |                          |                         | 0                            | 1,115                  | 520            |                |                            |
| (U)  | Program Support  |   |                          |                         | 0                            | 250                    | 156            |                |                            |
| (U)  | Total  |   |                          |                         | 0                            | 8,765                  | 15,173         |                |                            |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                              |                        |                |                |                            |
| (U)  | Performing Organizations:  |   |                          |                         |                              |                        |                |                |                            |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC           | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete FY 2001 |
|  | Product Development Organizations  |   |                          |                         |                              |                        |                |                |                            |
|  | ISC2 Contractor (TBD)  | CP/AF                                   | Aug 00                   | N/A                     | N/A                          | 0                      | 0              | 400            | 13,272                     |
|  | Systems Engineering  | MIPR                                    | Jan 00                   | N/A                     | N/A                          | 0                      | 0              | 5,560          | Continuing                 |
|  | Development & Integration  |   |                          |                         |                              |                        |                |                | Continuing                 |
|  | Contractor   |   |                          |                         |                              |                        |                |                |                            |
|  | Support and Management Organizations                                     |   |                          |                         |                              |                        |                |                |                            |
|  | FFRDC  | CP/FF                                   | Jan 00                   | N/A                     | N/A                          | 0                      | 0              | 1,440          | 1,225                      |
|  | A&AS   | CP/FF                                   | Jan 00                   | N/A                     | N/A                          | 0                      | 0              | 1,115          | 520                        |
|  | Program Support  | N/A                                     | Jan 00                   | N/A                     | N/A                          | 0                      | 0              | 250            | 156                        |
|  | Test and Evaluation Organizations  |   |                          |                         |                              |                        |                |                |                            |
|  | None   |   |                          |                         |                              |                        |                |                |                            |

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Exhibit R-3 (PE 0305906F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                              |                |                | DATE           | February 2000      | PROJECT       |
|--|--|------------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE          |                |                | 674806         |                    |               |
| 07 - Operational System Development                |  | 0305906F NCMC - TW/AA System |                |                |                |                    |               |
| (U) Government Furnished Property:                 |  |                              |                |                |                |                    |               |
| Contract   |  |                              |                |                |                |                    |               |
|  |  | Method/Type                  | Award or       |                |                |                    |               |
| Item   |  | or Funding                   | Obligation     | Delivery       |                |                    |               |
| Description  |  | Vehicle                      | Date           | Date           |                |                    |               |
| Product Development Property                       |  |                              |                |                |                |                    |               |
| None   |  |                              |                |                |                |                    |               |
| Support and Management Property                    |  |                              |                |                |                |                    |               |
| None   |  |                              |                |                |                |                    |               |
| Test and Evaluation Property                       |  |                              |                |                |                |                    |               |
| None   |  |                              |                |                |                |                    |               |
| Subtotals  |  |                              |                |                |                |                    |               |
| Subtotal Product Development                       |  | Total Prior to FY 1999       | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  |  | 0                            | 0              | 5,960          | 13,272         | TBD                | TBD           |
| Subtotal Support and Management                    |  | 0                            | 0              | 2,805          | 1,901          | TBD                | TBD           |
| Subtotal Test and Evaluation                       |  |                              |                |                |                |                    |               |
| Total Project                                      |  | 0                            | 0              | 8,765          | 15,173         | TBD                | TBD           |

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Exhibit R-3 (PE 0305906F)

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Exhibit R-3 (PE 0305906F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                |                     |                  |                  |                  |                  |                  |                  |            | DATE | February 2000 |
|---|----------------|---------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY   |                | PE NUMBER AND TITLE |                  |                  |                  |                  |                  |                  |            |      |               |
| 07 - Operational System Development   |                | 0305910F SPACETRACK |                  |                  |                  |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)  | FY 1999 Actual | FY 2000 Estimate    | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost   | 42,410         | 54,010              | 2,553            | 583              | 0                | 0                | 0                | 0                | TBD        |      |               |
| 674241 Advanced Electro Optical System (AEOS)   | 23,464         | 20,660              | 0                | 0                | 0                | 0                | 0                | 0                | 192,411    |      |               |
| 674279 Have Stare Radar   | 18,946         | 27,253              | 1,387            | 0                | 0                | 0                | 0                | 0                | TBD        |      |               |
| 674791 GEODSS Sustainment   | 0              | 6,097               | 1,166            | 583              | 0                | 0                | 0                | 0                | 7,846      |      |               |
| Quantity of RDT&E Articles  | 0              | 0                   | 0                | 0                | 0                | 0                | 0                | 0                | 0          |      |               |
| NOTE: Have Stare total cost not available since it was transferred from Intelligence budget in FY 93  |                |                     |                  |                  |                  |                  |                  |                  |            |      |               |
| (U) <u>A. Mission Description</u><br>The SPACETRACK program element represents a worldwide Space Surveillance Network (SSN) of dedicated, collateral, and contributing electro-optical, passive radio frequency (RF) and radar sensors. The SSN is tasked to provide space object identification and cataloging, satellite attack warning, timely notification to U.S. forces of satellite fly-over, space treaty monitoring, and scientific and technical intelligence gathering. The continued increase in satellite and orbital debris populations, as well as the increasing diversity in launch trajectories, non-standard orbits, and geosynchronous altitudes, necessitates continued modernization of the SSN to meet existing and future requirements and ensure their cost-effective supportability. The resources and responsibility for completing the HAVE STARE Radar System development were transferred to SPACETRACK from an intelligence program per Congressional direction in FY93. |                |                     |                  |                  |                  |                  |                  |                  |            |      |               |
| The GEODSS Sustainment project, a new effort, will develop and field ten Charge Coupled Device (CCD) Cameras for the Ground-Based Electro-Optical Deep Space Surveillance (GEODSS) System, located at Socorro, NM; Diego Garcia, Indian Ocean; and Maui, Hawaii. In addition, this project will fund the purchase and integration of ten Modular Precision Angular Control Systems (MPACS).   |                |                     |                  |                  |                  |                  |                  |                  |            |      |               |
| (U) <u>B. Budget Activity Justification</u><br>All of these projects are Budget Activity 7, Operational Systems Development, because they involve development of or modifications to operational sensor network sites.  |                |                     |                  |                  |                  |                  |                  |                  |            |      |               |

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Exhibit R-2 (PE 0305910F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                     |         | DATE    | February 2000 |
|---|--|---------------------|---------|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE |         |         |               |
| 07 - Operational System Development                 |  | 0305910F SPACETRACK |         |         |               |
| (U)   | <u>C. Program Change Summary (\$ in Thousands)</u>   |                     |         |         |               |
| (U)   | Previous President's Budget (FY 2000 PBR)  | FY 1999             | FY 2000 | FY 2001 | Total Cost    |
| (U)   | Appropriated Value   | 45,375              | 54,806  | 1,178   | TBD           |
| (U)   | Adjustments to Appropriated Value  | 45,832              | 54,806  |         |               |
|   | a. Congressional/General Reductions  | -457                | -72     |         |               |
|   | b. Small Business Innovative Research  | -1,409              |         |         |               |
|   | c. Omnibus or Other Above Threshold Reprogram  |                     | -297    |         |               |
|   | d. Below Threshold Reprogram   | -1,319              |         |         |               |
|   | e. Rescissions   | -237                | -427    |         |               |
|   | f. Other   |                     |         |         | TBD           |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |                     |         | 1,375   |               |
| (U)   | Current Budget Submit/FY 2001 PBR  | 42,410              | 54,010  | 2,553   | TBD           |
|   | NOTE: Total cost data not available. Have Stare program transferred from the intelligence budget in FY93 at the direction of Congress. |                     |         |         |               |
| (U)   | <u>Significant Program Changes:</u>  |                     |         |         |               |

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Exhibit R-2 (PE 0305910F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |  |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|--|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |  | 0305910F SPACETRACK  |                  |                  |                  |                  |                  |                  |                  | 674241     |               |
| COST (\$ in Thousands)  |  | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674241  | Advanced Electro Optical System (AEOS) | 23,464   | 20,660           | 0                | 0                | 0                | 0                | 0                | 0                | 192,411    |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The Advanced Electro-Optical System (AEOS) is a 3.67 meter telescope addition to the Maui Space Surveillance System (MSSS). The AEOS program was initiated in FY91 per Congressional direction. Congress continued to appropriate funding for this project in FY93, FY94, FY95, and FY96. DoD budgeted for the continuation of AEOS in FY97, FY98, FY99 and in FY00. This project is in Budget Activity 7, Operational Systems Development, because it involves sustained engineering support for development of, or modifications to, an operational SPACETRACK network site. Beginning in FY01, the Air Force Research Laboratory (AFRL) will assume management of AEOS, and funding will appear in PE 63444, Budget Activity 3, Advanced Technology.</p> |  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands)              |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$14,570                               | Continued integration & test of Radiometer, Longwave Infrared Imager (LWIR) and Adaptive Optics (A/O) System   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,713                                | Completed the MSSS Observatory Control System (OCS)  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$5,841                                | R&D upgrades to the MSSS, operational transition of AEOS, visitor programs & purchase spares   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,340                                | University of Hawaii (UH) spectrograph and atmospheric characterization research   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$23,464                               | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands)              |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$10,175                               | Complete site testing and integration of the adaptive optics system; procurement of spares; transition of system from AFSPC to AFRL                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$2,685                                | Complete integration and test upgrade to MSSS Observatory Control System   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$7,800                                | Continue R&D and upgrades to MSSS (P3I items) such as AEOS/OCS enhancements to instrumentation and coude beam; advanced daylight imaging techniques and tool development |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$20,660                               | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2001 (\$ in Thousands)              |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                                    | No Applicable  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                                    | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                     |                 |                 |                 |                 |                 |                 |                 | DATE              | February 2000 |
|--|--|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE |                 |                 |                 |                 |                 |                 |                 | PROJECT           |               |
| 07 - Operational System Development                  |  | 0305910F SPACETRACK |                 |                 |                 |                 |                 |                 |                 | 674241            |               |
| (U)  | <b>B. Project Change Summary</b>   |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
|  | Note: The Radiometer Acceptance, Long Wave Imager (LWI) and Observatory Control System (OCS) delays were due to software/hardware failures during Site Acceptance Testing. The Adaptive Optics SAT slip is due to technical software problems. The software/hardware problems are corrected and the program is on schedule for a Jun 00 DT&E completion. |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>  |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
|  |  | <u>FY 1999</u>      | <u>FY 2000</u>  | <u>FY 2001</u>  | <u>FY 2002</u>  | <u>FY 2003</u>  | <u>FY 2004</u>  | <u>FY 2005</u>  | <u>Cost to</u>  | <u>Total Cost</u> |               |
|  |  | <u>Actual</u>       | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Complete</u> |                   |               |
| (U)  | AF RDT&E   |                     |                 | 4,625           | 4,627           | 4,625           | 4,622           | 4,617           | Continuing      | TBD               |               |
| (U)  | Other APPN   |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
|  | None   |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | <b>D. Acquisition Strategy</b>   |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
|  | All major contracts were awarded after full and open competition.  |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | <b>E. Schedule Profile</b>   |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
|  |  | <u>FY 1999</u>      |                 |                 |                 |                 | <u>FY 2000</u>  |                 | <u>FY 2001</u>  |                   |               |
|  |  | 1                   | 2               | 3               | 4               | 1               | 2               | 3               | 4               |                   |               |
| (U)  | Radiometer Acceptance  |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | Long Wave Imager Acceptance  |                     |                 |                 | *               |                 |                 |                 |                 |                   |               |
| (U)  | Observatory Control Sys Acceptance   |                     |                 |                 | *               |                 |                 |                 |                 |                   |               |
| (U)  | Adaptive Optics System Acceptance  |                     |                 |                 |                 | *               |                 | X               |                 |                   |               |
| (U)  | AEOS DT&E Complete   |                     |                 |                 |                 |                 |                 | X               |                 |                   |               |
|  | * indicates task completion/X indicates planned task   |                     |                 |                 |                 |                 |                 |                 |                 |                   |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |             |            |            |                     |         |                           |           |         |
|--|---|-------------|------------|------------|---------------------|---------|---------------------------|-----------|---------|
| BUDGET ACTIVITY                                    |   |             |            |            | DATE                |         | PROJECT                   |           |         |
| 07 - Operational System Development                |   |             |            |            | 0305910F SPACETRACK |         | February 2000             |           |         |
|  |   |             |            |            | PE NUMBER AND TITLE |         | 674241                    |           |         |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                                 |             |            |            |                     |         |                           |           |         |
| (U)  | Congressionally directed level of effort for AEOS Maui facilities expansion |             |            |            |                     |         |                           |           |         |
| (U)  | Total   |             |            |            |                     |         |                           |           |         |
|  |   |             |            |            | FY 1999             | FY 2000 | FY 2001                   |           | FY 2001 |
|  |   |             |            |            | 23,464              | 20,660  | 0                         |           | 0       |
|  |   |             |            |            | 23,464              | 20,660  | 0                         |           | 0       |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands)    |             |            |            |                     |         |                           |           |         |
| (U)  | Performing Organizations:   |             |            |            |                     |         |                           |           |         |
|  | Contractor or   | Contract    |            |            |                     |         |                           |           |         |
|  | Government  | Method/Type | Award or   | Performing | Project             |         |                           |           |         |
|  | Performing  | or Funding  | Obligation | Activity   | Office              |         |                           |           |         |
|  | Activity  | Vehicle     | Date       | EAC        | EAC                 |         |                           |           |         |
|  | Product Development Organizations   |             |            |            | Total Prior         | Budget  | Budget                    | Budget to | Total   |
|  |   |             |            |            | to FY 1999          | FY 1999 | FY 2000                   | Complete  | Program |
|  | Kiewit Pacific Co   | C/FFP/AF    | Aug 94     | 21,000     | 22,979              | 0       | 0                         | 0         | 22,979  |
|  | Kapolei, HI   |             |            |            |                     |         |                           |           |         |
|  | Contraves USA   | C/FFP/AF    | Dec 91     | 23,000     | 23,413              | 0       | 0                         | 0         | 23,413  |
|  | Pittsburgh, PA  |             |            |            |                     |         |                           |           |         |
|  | ROSI  | C/CPAF/AF   | Aug 94     | 31,000     | 27,353              | 7,009   | 2,600                     | 0         | 36,962  |
|  | Danbury, CT   |             |            |            |                     |         |                           |           |         |
|  | COMSAT RSI, Inc   | C/FFP/AF    | Aug 95     | 7,000      | 7,289               | 0       | 0                         | 0         | 7,289   |
|  | Clarksburg, MD  |             |            |            |                     |         |                           |           |         |
|  | Mission Research Corp   | C/CPIF/AF   | Jul 95     | 4,600      | 4,860               | 600     | 300                       | 0         | 5,760   |
|  | Santa Barbara, CA   |             |            |            |                     |         |                           |           |         |
|  | Raytheon  | C/CPIF/AF   | Sep 95     | 5,800      | 6,948               | 1,700   | 375                       | 0         | 9,023   |
|  | El Segundo, CA  |             |            |            |                     |         |                           |           |         |
|  | RTS   | C/CPAF/AF   | Sep 95     | N/A        | 16,640              | 9,941   | 13,885                    | 0         | 40,466  |
|  | Kihei, Maui, HI   |             |            |            |                     |         |                           |           |         |
|  | RPS   | C/CPAF/AF   | Oct 90     | N/A        | 12,933              | 0       | 0                         | 0         | 12,933  |
|  | Kihei, Maui, HI   |             |            |            |                     |         |                           |           |         |
|  | UH*   | C/CR/AF     | Oct 96     | 3,400      | 1,700               | 1,340   | 625                       | 0         | 3,665   |
|  | Maui, HI  |             |            |            |                     |         |                           |           |         |
| Project 674241                                     |   |             |            |            | Page 5 of 16 Pages  |         | Exhibit R-3 (PE 0305910F) |           |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)  |             |                     |     |     |             | DATE               | February 2000 |                           |          |         |
|---|-------------|---------------------|-----|-----|-------------|--------------------|---------------|---------------------------|----------|---------|
| BUDGET ACTIVITY   |             | PE NUMBER AND TITLE |     |     |             | PROJECT            |               |                           |          |         |
| 07 - Operational System Development   |             | 0305910F SPACETRACK |     |     |             | 674241             |               |                           |          |         |
| (U) Performing Organizations Continued:   |             |                     |     |     |             |                    |               |                           |          |         |
| *Congressionally directed Spectrograph Research/Atmospheric Characterization Support and Management Organizations |             |                     |     |     |             |                    |               |                           |          |         |
| Logicon RDA   | C/CPAF/AF   | Oct 95              | N/A | N/A | 2,457       | 399                | 350           | 0                         | 0        | 3,206   |
| Albuquerque, NM   |             |                     |     |     |             |                    |               |                           |          |         |
| Logicon RDA   | C/CPAF/AF   | Oct 93              | N/A | N/A | 3,360       | 0                  | 0             | 0                         | 0        | 3,360   |
| Albuquerque, NM   |             |                     |     |     |             |                    |               |                           |          |         |
| MIT/LL  | SS          | Oct 93              | N/A | N/A | 2,566       | 250                | 300           | 0                         | 0        | 3,116   |
| Cambridge, MA   |             |                     |     |     |             |                    |               |                           |          |         |
| S. Systems Corp   | C/CPFF/AF   | Jul 93              | N/A | N/A | 2,976       | 0                  | 0             | 0                         | 0        | 2,976   |
| Albuquerque, NM   |             |                     |     |     |             |                    |               |                           |          |         |
| ARMY COE  | SS          | Jan 95              | N/A | N/A | 1,617       | 0                  | 0             | 0                         | 0        | 1,617   |
| Haleakala, Maui, HI   |             |                     |     |     |             |                    |               |                           |          |         |
| WJS   | SS          | Oct 97              | N/A | N/A | 259         | 150                | 150           | 0                         | 0        | 559     |
| Albuquerque, NM   |             |                     |     |     |             |                    |               |                           |          |         |
| Program Office  | Various     | N/A                 | N/A | N/A | 10,937      | 2,075              | 2,075         | 0                         | 0        | 15,087  |
| Test and Evaluation Organizations   |             |                     |     |     |             |                    |               |                           |          |         |
| None  |             |                     |     |     |             |                    |               |                           |          |         |
| (U) Government Furnished Property:  |             |                     |     |     |             |                    |               |                           |          |         |
| Contract  |             |                     |     |     |             |                    |               |                           |          |         |
| Item  | Method/Type | Award or            |     |     | Total Prior | Budget             | Budget        | Budget to                 | Total    |         |
| Description   | or Funding  | Obligation          |     |     | to FY 1999  | FY 1999            | FY 2000       | FY 2001                   | Complete | Program |
| Vehicle   |             | Date                |     |     |             |                    |               |                           |          |         |
| Product Development Property  |             |                     |     |     |             |                    |               |                           |          |         |
| None  |             |                     |     |     |             |                    |               |                           |          |         |
| Support and Management Property   |             |                     |     |     |             |                    |               |                           |          |         |
| None  |             |                     |     |     |             |                    |               |                           |          |         |
| Test and Evaluation Property  |             |                     |     |     |             |                    |               |                           |          |         |
| None  |             |                     |     |     |             |                    |               |                           |          |         |
| Project 674241  |             |                     |     |     |             | Page 6 of 16 Pages |               | Exhibit R-3 (PE 0305910F) |          |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                        |                | DATE           | February 2000                    |
|--|--|------------------------|----------------|----------------|----------------------------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE    |                | PROJECT        |                                  |
| 07 - Operational System Development                |  | 0305910F SPACETRACK    |                | 674241         |                                  |
| Subtotals  |  | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete Total Program |
| Subtotal Product Development                       |  | 124,115                | 20,590         | 17,785         | 0 0 162,490                      |
| Subtotal Support and Management                    |  | 24,172                 | 2,874          | 2,875          | 0 0 29,921                       |
| Subtotal Test and Evaluation                       |  |                        |                |                |                                  |
| Total Project                                      |  | 148,287                | 23,464         | 20,660         | 0 0 192,411                      |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                           |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |                           | PE NUMBER AND TITLE                                     |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |                           | 0305910F SPACETRACK                                     |                  |                  |                  |                  |                  |                  |                  | 674279     |               |
| COST (\$ in Thousands)  |                           | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674279  | Have Stare Radar          | 18,946  | 27,253           | 1,387            | 0                | 0                | 0                | 0                | 0                | TBD        |               |
| NOTE: Have Stare total cost not available since it was transferred from intel budget in FY93  |                           |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| <b>(U) A. Mission Description</b>   |                           |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| The HAVE STARE radar (FPS-129) was transferred from the intelligence budget in FY93 at the direction of Congress. The Air Force has identified a requirement for the HAVE STARE system and has programmed funding in this program element to complete development and to deploy the system. The radar is a high resolution X-band tracking and imaging radar with a 27 meter mechanical dish antenna. The system is being deployed to Vardø, Norway, as a dedicated space surveillance sensor to support the mission of space object catalog maintenance and mission payload assessment. Progress in FY 99 was completion of the radar tower, installation of antenna, radome, and most radar electronics. The radar will not be a fully integrated element of the Missile Warning Network. The radar will only be integrated with the Space Control Center (Cheyenne Mtn AS, CO) and the Alternate Space Control Center (Dalgren Naval Surface Warfare Center, VA) |                           |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,200                   | Continued radar development incremental funding         |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$5,600                   | Continued site preparations                             |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$11,224                  | Deployed and installed program equipment                |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$922                     | Continued Logistics and training                        |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$18,946                  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$11,900                  | Complete facility preparation                           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$7,879                   | Complete system installation, integration, and checkout |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$5,084                   | Conduct formal system tests                             |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$2,150                   | Continue Logistics and training                         |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$240                     | Demolish test facility and cleanup test site            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$27,253                  | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| BUDGET ACTIVITY                                      |   | DATE                |           |                            |        |        |        |            |
|--|---|---------------------|-----------|----------------------------|--------|--------|--------|------------|
| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   | February 2000       |           |                            |        |        |        |            |
| PE NUMBER AND TITLE                                  |   | PROJECT             |           |                            |        |        |        |            |
| 07 - Operational System Development                  |   | 0305910F SPACETRACK |           |                            |        |        |        |            |
| 07 - Operational System Development                  |   | 674279              |           |                            |        |        |        |            |
| (U)  | <b>A. Mission Description Continued</b>   |                     |           |                            |        |        |        |            |
| (U)  | FY 2001 (\$ in Thousands)   |                     |           |                            |        |        |        |            |
| (U)  | \$500 Complete system development   |                     |           |                            |        |        |        |            |
| (U)  | \$587 Complete testing  |                     |           |                            |        |        |        |            |
| (U)  | \$300 Accomplish residual logistics and training  |                     |           |                            |        |        |        |            |
| (U)  | \$1,387 Total   |                     |           |                            |        |        |        |            |
| (U)  | <b>B. Project Change Summary</b>  |                     |           |                            |        |        |        |            |
|  | FY01: Funds added to finish installation and checkout of radar in Vardo, Norway.  |                     |           |                            |        |        |        |            |
|  | Projected schedule slip (Section E): Recent accident (Nov 99) occurred in Vardo, Norway when high winds blew of the Radome. The projected schedule slip is 6-8 months. Initial Operational Capability (IOC) is now scheduled for 4th Qtr of FY01 and Full Operational Capability (FOC) is scheduled for 3rd Qtr FY02. |                     |           |                            |        |        |        |            |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |                     |           |                            |        |        |        |            |
|  | FY 1999 Actual FY 2000 Estimate FY 2001 Estimate FY 2002 Estimate FY 2003 Estimate FY 2004 Estimate FY 2005 Estimate Total Cost   |                     |           |                            |        |        |        |            |
| (U)  | AF RDT&E  |                     |           |                            |        |        |        |            |
| (U)  | Other APPN  |                     |           |                            |        |        |        |            |
| (U)  | Operations and Maintenance  | 49,412              | 51,485    | 52,634                     | 50,860 | 51,407 | 53,619 | 57,898     |
|  | AF*   |                     |           |                            |        |        |        | Continuing |
|  | * Includes other projects in the Spacetrack program element   |                     |           |                            |        |        |        |            |
| (U)  | <b>D. Acquisition Strategy</b>  |                     |           |                            |        |        |        |            |
|  | The existing contract with Raytheon was modified in the third quarter of FY98 for the dismantling, shipment, and installation of the radar, and will be extended until FY01   |                     |           |                            |        |        |        |            |
| (U)  | <b>E. Schedule Profile</b>  |                     |           |                            |        |        |        |            |
|  |   | FY 1999             | FY 2000   | FY 2001                    |        |        |        |            |
|  |   | 1 2 3 4 *           | 1 2 3 4 * | 1 2 3 4 *                  |        |        |        |            |
| (U)  | Radar dismantled at Test Site (Vandenberg AFB)  |                     |           |                            |        |        |        |            |
| (U)  | Begin Installation at Operational Site (Vardø, Norway)  |                     |           |                            |        |        |        |            |
| (U)  | Formal System Testing Completed   |                     |           |                            |        |        |        | X          |
| (U)  | System Initial Operational Capability   |                     |           |                            |        |        |        | X          |
| Project 674279                                       |   | Page 9 of 16 Pages  |           | Exhibit R-2A (PE 0305910F) |        |        |        |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   | DATE                | February 2000 |         |
|--|---|---------------------|---------------|---------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE |               | PROJECT |
| 07 - Operational System Development                  |   | 0305910F SPACETRACK |               | 674279  |
| (U) <u>E. Schedule Profile Continued</u>             |   |                     |               |         |
|  |   | FY 1992             | FY 2000       | FY 2001 |
|  | 1 | 2                   | 3             | 4       |
|  |   | 1                   | 2             | 3       |
|  |   | 4                   | 1             | 2       |
|  |   |                     | 4             | 3       |
|  |   |                     |               | 4       |
| * indicates completed event/X planned event.         |   |                     |               |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                    |                        |                |                |                | DATE                                       | February 2000 |
|--|--|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|--|---------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         |                    |                        |                |                |                | PROJECT                                    | 674279        |
| 07 - Operational System Development                |  |   |                          |                         |                    |                        |                |                |                | PE NUMBER AND TITLE<br>0305910F SPACETRACK |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>   |   |                          |                         |                    |                        |                |                |                |  |               |
| (U)  | System development   |   |                          |                         |                    |                        |                |                |                | FY 1999                                    | FY 2000       |
| (U)  | Site preparation and support   |   |                          |                         |                    |                        |                |                |                | 1,000                                      | 0             |
| (U)  | Deployment, installation and checkout  |   |                          |                         |                    |                        |                |                |                | 5,000                                      | 10,900        |
| (U)  | Logistics and training   |   |                          |                         |                    |                        |                |                |                | 9,894                                      | 7,229         |
| (U)  | Formal system testing  |   |                          |                         |                    |                        |                |                |                | 922  | 2,000         |
| (U)  | Complete open development and testing items  |   |                          |                         |                    |                        |                |                |                | 0  | 4,634         |
| (U)  | SPO support  |   |                          |                         |                    |                        |                |                |                | 0  | 0             |
| (U)  | Take down test facility and cleanup test site  |   |                          |                         |                    |                        |                |                |                | 2,130                                      | 2,290         |
| (U)  | Total  |   |                          |                         |                    |                        |                |                |                | 0  | 200           |
|  |  |   |                          |                         |                    |                        |                |                |                | 18,946                                     | 27,253        |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>  |   |                          |                         |                    |                        |                |                |                |  |               |
| (U)  | <b>Performing Organizations:</b>   |   |                          |                         |                    |                        |                |                |                |  |               |
|  | Contract or Government Performing Activity   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete                         | Total Program |
|  | <b>Product Development Organizations</b>   |   |                          |                         |                    |                        |                |                |                |  |               |
|  | Raytheon Elec Sys  | C/CPIF/AF                               | Mar 91                   | 26,520                  | 26,520             | 3,022                  | 10,494         | 12,032         | 500            | 0  | 26,048        |
|  | Sudbury, MA  |   |                          |                         |                    |                        |                |                |                |  |               |
|  | Site Preparation   | Various                                 | Various                  | N/A                     | N/A                | 2,100                  | 5,000          | 10,850         | 0              | 0  | 17,950        |
|  | Misc   | Various                                 | Various                  | N/A                     | N/A                | 563                    | 734            | 1,519          | 0              | 0  | 2,816         |
|  | Total prior to FY 1999 data not available; program transferred from the intelligence budget in FY93 at the direction of Congress |   |                          |                         |                    |                        |                |                |                |  |               |
|  | <b>Support and Management Organizations</b>  |   |                          |                         |                    |                        |                |                |                |  |               |
|  | MITRE  | SS/PR                                   | Oct 99                   | N/A                     | N/A                | 800                    | 728            | 800            | 250            | 0  | 2,578         |
|  | A&AS   | C/PR                                    | Various                  | N/A                     | N/A                | 1,123                  | 954            | 800            | 587            | 0  | 3,464         |
|  | Lincoln Lab  | SS/PR                                   | Oct 99                   | N/A                     | N/A                | 230                    | 145            | 0              | 0              | 0  | 375           |
|  | Program Office   | Various                                 | Various                  | N/A                     | N/A                | 354                    | 451            | 690            | 50             | 0  | 1,545         |
|  | Misc   | Various                                 | Various                  | N/A                     | N/A                | 24                     | 440            | 562            | 0              | 0  | 1,026         |
| Project 674279                                     |  |   |                          |                         |                    |                        |                |                |                | Page 11 of 16 Pages                        |               |
|  |  |   |                          |                         |                    |                        |                |                |                | Exhibit R-3 (PE 0305910F)                  |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |             |                     |          |  |  |         |  |        |  | DATE | February 2000 |
|--|-------------|---------------------|----------|--|--|---------|--|--------|--|------|---------------|
| BUDGET ACTIVITY  |             | PE NUMBER AND TITLE |          |  |  | PROJECT |  | 674279 |  |      |               |
| 07 - Operational System Development  |             | 0305910F SPACETRACK |          |  |  |         |  |        |  |      |               |
| (U) <u>Performing Organizations Continued:</u>   |             |                     |          |  |  |         |  |        |  |      |               |
| Test and Evaluation Organizations  |             |                     |          |  |  |         |  |        |  |      |               |
| None   |             |                     |          |  |  |         |  |        |  |      |               |
| (U) <u>Government Furnished Property:</u>  |             |                     |          |  |  |         |  |        |  |      |               |
| Contract   |             |                     |          |  |  |         |  |        |  |      |               |
| Item   | Method/Type | Award or            |          |  |  |         |  |        |  |      |               |
| Description  | or Funding  | Obligation          | Delivery |  |  |         |  |        |  |      |               |
| Product Development Property   | Vehicle     | Date                | Date     |  |  |         |  |        |  |      |               |
| None   |             |                     |          |  |  |         |  |        |  |      |               |
| Support and Management Property  |             |                     |          |  |  |         |  |        |  |      |               |
| None   |             |                     |          |  |  |         |  |        |  |      |               |
| Test and Evaluation Property   |             |                     |          |  |  |         |  |        |  |      |               |
| None   |             |                     |          |  |  |         |  |        |  |      |               |
| <u>Subtotals</u>   |             |                     |          |  |  |         |  |        |  |      |               |
| Subtotal Product Development   |             |                     |          |  |  |         |  |        |  |      |               |
| Subtotal Support and Management  |             |                     |          |  |  |         |  |        |  |      |               |
| Subtotal Test and Evaluation   |             |                     |          |  |  |         |  |        |  |      |               |
| Total Project  |             |                     |          |  |  |         |  |        |  |      |               |
| Have Share total cost data not available; program transferred from the intelligence budget in FY93 at the direction of Congress. Prior years data reflects costs since FY93. |             |                     |          |  |  |         |  |        |  |      |               |

Project 674279

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Exhibit R-3 (PE 0305910F)



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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                           |   |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|--|---------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY  |                           | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT                    |               |
| 07 - Operational System Development  |                           | 0305910F SPACETRACK   |                  |                  |                  |                  |                  |                  |                  | 674791                     |               |
|  |                           | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| 674791   | GEODSS Sustainment        | 0   | 6,097            | 1,166            | 583              | 0                | 0                | 0                | 0                | 7,846                      |               |
| Note: This was a new start in FY00.  |                           |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| <b>(U) A. Mission Description</b><br>The GEODSS Sustainment project begins in FY00 to develop and field ten Charge Coupled Device (CCD) Cameras for the Ground-Based Electro-Optical Deep Space Surveillance (GEODSS) System, located at Socorro, NM; Diego Garcia, Indian Ocean; and Maui, Hawaii. The project includes associated software changes to the Optical, Command, Control & Communications (OC3F) at Edwards AFB, CA. In addition, this project purchases and integrates ten replacement Modular Precision Angular Control Systems (MPACS) and funds associated logistics requirements, technical data and training. The project develops the first components and installs them at the test unit at site 1, Socorro, NM. Follow-on CCD cameras and MPACS will be produced and installed using Space Track Modification funds (BP83). This project, with the recently completed GEODSS Modification Program, will result in more than double the throughput and search rate of the legacy system. Without CCD camera replacement, the entire GEODSS system will be unusable in the FY02 time-frame, as mission critical Ebsicon tubes are no longer manufactured or supported by any vendor and the current supply of spares will run out by the end of 2001. This would result in loss of geosynchronous space situational awareness and less ability to assess the space order of battle of a potential aggressor. |                           |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | FY 1999 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$0                       | Not Applicable  |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$0                       | Total   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | FY 2000 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$2,179                   | Begin CCD design  |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$1,600                   | Begin camera design   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$1,000                   | Design MPACS  |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$1,318                   | Develop Test bed at Site 1, Socorro, New Mexico                               |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$6,097                   | Total   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | FY 2001 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$166                     | Stand-up and begin operational use of Test Bed at Site 1, Socorro, New Mexico |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$500                     | Complete CCD camera design  |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$500                     | Test prototype camera / MPACS   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| (U)  | \$1,166                   | Total   |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Project 674791   |                           |   |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0305910F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                     |          |          |          |          |          |                  |            | DATE                       | February 2000 |
|--|--|---------------------|----------|----------|----------|----------|----------|------------------|------------|----------------------------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE |          |          |          |          |          |                  |            | PROJECT                    |               |
| 07 - Operational System Development                  |  | 0305910F SPACETRACK |          |          |          |          |          |                  |            | 674791                     |               |
| (U)  | <b>B. Project Change Summary</b>   |                     |          |          |          |          |          |                  |            |                            |               |
|  | This project was reported as a new start in FY00.  |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>  |                     |          |          |          |          |          |                  |            |                            |               |
|  | FY 1999  | FY 2000             | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to Complete | Total Cost |                            |               |
|  | Actual   | Estimate            | Estimate | Estimate | Estimate | Estimate | Estimate |                  |            |                            |               |
| (U)  | AF RDT&E   |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Other APFN   |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | (Space Mods for BA 83) *   |                     | 9,110    | 8,784    | 3,034    |          |          | 0                | 20,928     |                            |               |
|  | * Space modifications for the GEODSS Sustainment project only                                    |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | <b>D. Acquisition Strategy</b>   |                     |          |          |          |          |          |                  |            |                            |               |
|  | The contract for the GEODSS Sustainment project will be awarded after full and open competition. |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | <b>E. Schedule Profile</b>   |                     |          |          |          |          |          |                  |            |                            |               |
|  |  |                     |          |          |          |          |          |                  |            |                            |               |
|  |  |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Contract Award   |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Preliminary Design Review  |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Critical Design Review   |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Test Bed Standup   |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Prototype Mod Kit Test   |                     |          |          |          |          |          |                  |            |                            |               |
| (U)  | Site 1 Mod Kit (1st article) in production   |                     |          |          |          |          |          |                  |            |                            |               |
|  | * indicates completed event/X indicates planned event  |                     |          |          |          |          |          |                  |            |                            |               |
|  | Operational acceptance of 1st unit at Site 1 is Aug 02   |                     |          |          |          |          |          |                  |            |                            |               |
| Project 674791                                       |  |                     |          |          |          |          |          |                  |            | Exhibit R-2A (PE 0305910F) |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                       |  |   |                          |                         |                        |                        |                |                |                    |                    |
|--|--|---|--------------------------|-------------------------|------------------------|------------------------|----------------|----------------|--------------------|--------------------|
| BUDGET ACTIVITY  |  |   |                          |                         | DATE                   |                        | PROJECT        |                |                    |                    |
| 07 - Operational System Development                                      |  |   |                          |                         | 0305910F SPACETRACK    |                        | February 2000  |                |                    |                    |
| A. Project Cost Breakdown (\$ in Thousands)                              |  |   |                          |                         | FY 1999                |                        | FY 2000        |                | FY 2001            |                    |
| (U)  | System Engineering                         |   |                          |                         | 0                      |                        | 1,818          |                | 200                |                    |
| (U)  | Hardware Development                       |   |                          |                         | 0                      |                        | 1,766          |                | 666                |                    |
| (U)  | Software Development                       |   |                          |                         | 0                      |                        | 600            |                | 300                |                    |
| (U)  | Program Office Support                     |   |                          |                         | 0                      |                        | 1,913          |                | 0                  |                    |
| (U)  | Total                                      |   |                          |                         | 0                      |                        | 6,097          |                | 1,166              |                    |
| B. Budget Acquisition History and Planning Information (\$ in Thousands) |  |   |                          |                         |                        |                        |                |                |                    |                    |
| (U)  | Performing Organizations:                  |   |                          |                         |                        |                        |                |                |                    |                    |
|  | Contract or Government Performing Activity | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001     | Budget to Complete |
|  | Product Development Organizations          |   |                          |                         |                        |                        |                |                |                    | Total Program      |
|  | Prime Contractor                           | TBD                                     | Feb 00                   | TBD                     | 6,015                  | 0                      | 0              | 4,184          | 1,166              | 583                |
|  | Support and Management Organizations       |   |                          |                         |                        |                        |                |                |                    |                    |
|  | MITRE                                      | SS/PR                                   | Jan 00                   | TBD                     | 750                    | 0                      | 0              | 750            | 0                  | 0                  |
|  | MIT/Lincoln Lab                            | SS/PR                                   | Jan 00                   | TBD                     | 500                    | 0                      | 0              | 500            | 0                  | 0                  |
|  | A&AS                                       | C/PR                                    | Jan 00                   | TBD                     | 500                    | 0                      | 0              | 500            | 0                  | 0                  |
|  | Other Support                              | Various                                 | Jan 00                   | TBD                     | 163                    | 0                      | 0              | 163            | 0                  | 0                  |
|  | Test and Evaluation Organizations          |   |                          |                         |                        |                        |                |                |                    |                    |
|  | None                                       |   |                          |                         |                        |                        |                |                |                    |                    |
| (U)  | Government Furnished Property:             |   |                          |                         |                        |                        |                |                |                    |                    |
|  | Contract                                   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program      |
|  | Item Description                           |   |                          |                         |                        |                        |                |                |                    |                    |
|  | Product Development Property               |   |                          |                         |                        |                        |                |                |                    |                    |
|  | None                                       |   |                          |                         |                        |                        |                |                |                    |                    |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)  |  |                               |                       | DATE                  | February 2000         |
|---|--|-------------------------------|-----------------------|-----------------------|-----------------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE           |                       | PROJECT               |                       |
| 07 - Operational System Development                 |  | 0305910F SPACETRACK           |                       | 674791                |                       |
| (U) <u>Government Furnished Property Continued:</u> |  |                               |                       |                       |                       |
| <u>Support and Management Property</u>              |  |                               |                       |                       |                       |
| None  |  |                               |                       |                       |                       |
| <u>Test and Evaluation Property</u>                 |  |                               |                       |                       |                       |
| None  |  |                               |                       |                       |                       |
| <u>Subtotals</u>                                    |  |                               |                       |                       |                       |
| Subtotal Product Development                        |  | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u> | <u>Budget FY 2001</u> |
|   |  | 0                             | 0                     | 4,184                 | 583                   |
| Subtotal Support and Management                     |  | 0                             | 0                     | 1,913                 | 0                     |
| Subtotal Test and Evaluation                        |  |                               |                       |                       |                       |
| Total Project                                       |  | 0                             | 0                     | 6,097                 | 583                   |
|   |  |                               |                       |                       | <u>Total Program</u>  |
|   |  |                               |                       |                       | 5,933                 |
|   |  |                               |                       |                       | 1,913                 |
|   |  |                               |                       |                       | 7,846                 |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                |                                  |                  |                  |                  |                  |                  |                  |            | DATE | February 2000 |
|--|----------------|----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY  |                | PE NUMBER AND TITLE              |                  |                  |                  |                  |                  |                  |            |      |               |
| 07 - Operational System Development  |                | 0305911F Defense Support Program |                  |                  |                  |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)   | FY 1999 Actual | FY 2000 Estimate                 | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost  | 13,971         | 7,361                            | 11,462           | 6,418            | 6,697            | 0                | 0                | 0                | 1,923,990  |      |               |
| 673615 Shield/Alert  | 10,461         | 7,361                            | 7,380            | 4,336            | 4,616            | 0                | 0                | 0                | 69,426     |      |               |
| 673624 Defense Support Program   | 3,510          | 0                                | 4,082            | 2,082            | 2,081            | 0                | 0                | 0                | 1,854,564  |      |               |
| Quantity of RDT&E Articles   | 0              | 0                                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |      |               |
| <b>(U) A. Mission Description</b>  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| The Defense Support Program (DSP) is a system of satellites in geostationary orbits, fixed and mobile ground processing stations, one multi-purpose facility, and a ground communications network. DSP's primary mission is to provide strategic and tactical warning and limited attack assessment of a ballistic missile attack. Shield/ALERT (Attack and Launch Early Reporting to Theater) is a ground station mission processing capability which exploits inherent satellite capability to provide theater missile warning and cueing. |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| DSP 19 launched in April 1999, but the satellite failed to reach geosynchronous orbit.   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| <b>(U) B. Budget Activity Justification</b>  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| DSP is an operational system and is funded in Budget Activity 7, Operational Systems Support   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| <b>(U) C. Program Change Summary (\$ in Thousands)</b>   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| Previous President's Budget (FY 2000 PBR)  |                | FY 1999                          | FY 2000          | FY 2001          | Total Cost       |                  |                  |                  |            |      |               |
| Appropriated Value   |                | 11,811                           | 7,459            | 7,445            | 1,937,812        |                  |                  |                  |            |      |               |
| Adjustments to Appropriated Value  |                | 12,037                           | 7,459            |                  |                  |                  |                  |                  |            |      |               |
| a. Congressional/General Reductions  |                | -226                             |                  |                  |                  |                  |                  |                  |            |      |               |
| b. Small Business Innovative Research  |                | -398                             |                  |                  |                  |                  |                  |                  |            |      |               |
| c. Omnibus or Other Above Threshold Reprogram  |                |                                  | -40              |                  |                  |                  |                  |                  |            |      |               |
| d. Below Threshold Reprogram   |                | 2,636                            |                  |                  |                  |                  |                  |                  |            |      |               |
| e. Rescissions   |                | -78                              | -58              |                  |                  |                  |                  |                  |            |      |               |
| Page 1 of 11 Pages   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| Exhibit R-2 (PE 0305911F)  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   | DATE    | February 2000 |
|--|---|---------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                     |         |               |
| <b>07 - Operational System Development</b>   | <b>0305911F Defense Support Program</b> |         |               |
| (U) <u>C. Program Change Summary (\$ in Thousands) Continued</u>   |   |         |               |
| f. Other   |   |         | Total Cost    |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |   |         |               |
| (U) Current Budget Submit/FY 2001 PBR  |   |         |               |
| (U) <u>Significant Program Changes:</u>  |   |         |               |
| Funding: \$2.1M per year in FY01, FY02 and FY03 was realigned from the Missile Procurement to the RDT&E appropriation to fund DSP 23 mission unique integration with EELV.   |   | FY 1999 | FY 2000       |
|  |   |         | FY 2001       |
|  |   | 13,971  | 4,017         |
|  |   | 7,361   | 11,462        |
|  |   |         | -13,822       |
|  |   |         | 1,923,990     |
| Funding: \$12.5M FY01-FY03 funding transferred from BPAC 673624 to 673615 to support continued engineering task development for ALERT and engineering prototype, feasibility analysis, and developmental test and evaluation for Shield.       |   |         |               |
| Funding: \$1.4M FY99 received to support Space-Based Space Surveillance operations Advanced Concept Technology Demonstration (ACTD) Funds erroneously placed into BPAC 673615 versus the correct BPAC of 673624--both BPACs in this PE 35911F. |   |         |               |
| DSP 19 launched in April 1999, but the satellite failed to reach geosynchronous orbit.   |   |         |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |              |   |  |  |                                  |                  |                  |                  |                  | DATE                       |                  | PROJECT          |            |
|--|--------------|---|--|--|----------------------------------|------------------|------------------|------------------|------------------|----------------------------|------------------|------------------|------------|
| BUDGET ACTIVITY  |              |   |  |  | PE NUMBER AND TITLE              |                  |                  |                  |                  |                            |                  |                  |            |
| 07 - Operational System Development  |              |   |  |  | 0305911F Defense Support Program |                  |                  |                  |                  |                            |                  | 673615           |            |
| COST (\$ in Thousands)   |              |   |  |  | FY 1999 Actual                   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate           | FY 2005 Estimate | Cost to Complete | Total Cost |
| 673615   | Shield/Alert |   |  |  | 10,461                           | 7,361            | 7,380            | 4,336            | 4,616            | 0                          | 0                | 0                | 69,426     |
| <b>(U) A. Mission Description</b>  |              |   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| Beginning in 1993, the Talon Shield project developed changes to preexisting DSP processing techniques to provide a Theater Missile Defense capability. These changes provided for the timely and accurate detection, description, and tracking of Tactical Ballistic Missiles and other theater threats, and served as the basis for the activation, on 10 March 1995, of full-time ALERT System operations by the newly constituted 11th Space Warning Squadron. ALERT-generated messages are distributed to theater warfighters; they enhance attack operations/counterforce operations by providing accurate, timely launch point estimates and support active and passive defense by providing cueing data to shooters and warning data to theater assets in the form of impact point predictions. Shield has continued to serve as a key resource in the evolution of operational improvements to the ALERT System, demonstrating the value of candidate enhancements on a prototype basis in the live, real-time environment. |              |   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| <b>FY 1999 (\$ in Thousands)</b>   |              |   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$5,347      | Continued engineering task development to prototype and implement ALERT capabilities leading up to Increment I.           |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$2,114      | Continued SBIRS ground consolidation developmental test and evaluation.   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$1,600      | Technical analysis and independent verification and validation contractor by FFRDC  |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$1,400      | Space-Based Space Surveillance operations ACTD (placed in BPAC 673615 by error, will be properly executed in BPAC 673624) |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$10,461     | Total   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| <b>FY 2000 (\$ in Thousands)</b>   |              |   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$3,446      | Continue engineering prototypes and feasibility analysis.   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$2,715      | Continued SBIRS ground consolidation developmental test and evaluation.   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$1,200      | Technical analysis and independent verification and validation of contractor by FFRDC.                                    |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$7,361      | Total   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| <b>FY 2001 (\$ in Thousands)</b>   |              |   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$4,906      | Continue engineering prototypes and feasibility analysis.   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$1,257      | Continued SBIRS ground consolidation developmental test and evaluation.   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$1,217      | Technical analysis and independent verification and validation of contractor by FFRDC.                                    |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| (U)  | \$7,380      | Total   |  |  |                                  |                  |                  |                  |                  |                            |                  |                  |            |
| Project 673615   |              |   |  |  | Page 3 of 11 Pages               |                  |                  |                  |                  | Exhibit R-2A (PE 0305911F) |                  |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                                  |          |          |          |          |          |                            |            |
|--|--|----------------------------------|----------|----------|----------|----------|----------|----------------------------|------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE              |          |          |          |          |          | DATE                       | PROJECT    |
| 07 - Operational System Development                  |  | 0305911F Defense Support Program |          |          |          |          |          | February 2000              | 673615     |
| (U)  | <b>B. Project Change Summary</b>   |                                  |          |          |          |          |          |                            |            |
|  | \$4M FY00 funds has been transferred from DSP BPAC 673624 to support continued engineering task development for ALERT and engineering prototype, feasibility analysis, and developmental test and evaluation for Shield.   |                                  |          |          |          |          |          |                            |            |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>  |                                  |          |          |          |          |          |                            |            |
|  |  | FY 1999                          | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005                    | Total Cost |
|  |  | Actual                           | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate                   | Complete   |
| (U)  | AF RDT&E   |                                  |          |          |          |          |          |                            |            |
| (U)  | Other APPN   |                                  |          |          |          |          |          |                            |            |
| (U)  | Missile Procurement (PE 305911F, BA-05, P-28)  | 86,964                           | 108,342  | 106,356  | 113,770  | 100,528  | 30,335   | 35,577                     | 6,026      |
| (U)  | Other Procurement (PE 305911F, BA-65, P-N/A)   | 202                              | 14       | 6        | 0        | 0        | 0        | 0                          | 0          |
| (U)  | Related RDT&E:   |                                  |          |          |          |          |          |                            |            |
| (U)  | PE 603441F - SBIRS Dem/Val   | 144,723                          | 0        | 0        | 0        | 0        | 0        | 0                          | 1,154,120  |
| (U)  | PE 604442F - SBIRS Low EMD   | 36,627                           | 225,566  | 241,021  | 306,530  | 617,662  | 763,362  | 486,840                    | 513,647    |
| (U)  | PE 604441F- SBIRS High EMD   | 508,473                          | 420,476  | 569,188  | 389,879  | 196,841  | 128,871  | 100,856                    | 356,475    |
| (U)  | <b>D. Acquisition Strategy</b>   |                                  |          |          |          |          |          |                            |            |
|  | The ALERT squadron was activated on 1 Oct 94 with an ALERT Initial Operating Capability reached on 10 Mar 95. Shield RDT&E efforts develop DSP ground capabilities to satisfy continuously evolving threats. Shield supports transition to SBIRS ground architecture consolidating DSP elements. |                                  |          |          |          |          |          |                            |            |
| (U)  | <b>E. Schedule Profile</b>   |                                  |          |          |          |          |          |                            |            |
|  |  | FY 1999                          |          |          | FY 2000  |          |          | FY 2001                    |            |
|  |  | 1                                | 2        | 3        | 4        | 1        | 2        | 3                          | 4          |
| (U)  | Theater Situational Analyst (TSA) Transition   | *                                |          |          |          |          |          |                            |            |
| (U)  | ALERT Version 14 Operational   |                                  | *        |          |          |          |          |                            |            |
| (U)  | Shield Hardware Upgrade  |                                  | *        |          |          |          |          |                            |            |
| Project 673615                                       |  | Page 4 of 11 Pages               |          |          |          |          |          | Exhibit R-2A (PE 0305911F) |            |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |                                  |         | DATE                      | February 2000 | PROJECT |
|--|---|----------------------------------|---------|---------------------------|---------------|---------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE              |         | PROJECT                   |               |         |
| 07 - Operational System Development                |   | 0305911F Defense Support Program |         | 673615                    |               |         |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |                                  |         |                           |               |         |
| (U)  | Contractor Engineering Support  | FY 1999                          | FY 2000 | FY 2001                   |               |         |
| (U)  | Software Development  | 950                              | 0       | 0                         |               |         |
| (U)  | Program Management Support  | 2,298                            | 3,137   | 3,130                     |               |         |
| (U)  | Training Development  | 1,303                            | 650     | 650                       |               |         |
| (U)  | Developmental Test and Evaluation   | 600                              | 0       | 0                         |               |         |
| (U)  | FFRDC   | 2,310                            | 2,374   | 2,383                     |               |         |
| (U)  | Space-Based Space Surveillance ACTD   | 1,600                            | 1,200   | 1,217                     |               |         |
| (U)  | Total   | 1,400                            | 7,361   | 7,380                     |               |         |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |                                  |         |                           |               |         |
| (U)  | <u>Performing Organizations:</u>  |                                  |         |                           |               |         |
|  | <u>Contractor or</u>  | <u>Contract</u>                  |         |                           |               |         |
|  | <u>Government</u>   | <u>Method/Type</u>               |         |                           |               |         |
|  | <u>Performing</u>   | <u>Award or</u>                  |         |                           |               |         |
|  | <u>Activity</u>   | <u>Obligation</u>                |         |                           |               |         |
|  |   | <u>Date</u>                      |         |                           |               |         |
|  | Space-Based Space   |                                  |         |                           |               |         |
|  | Surveillance operations   |                                  |         |                           |               |         |
|  | ACTD (to be placed in   |                                  |         |                           |               |         |
|  | 673624 BPAC)  |                                  |         |                           |               |         |
|  | <u>Product Development Organizations</u>  |                                  |         |                           |               |         |
|  | Aerojet   | CPAF                             | Aug 92  | 7,898                     | 7,898         | 0       |
|  | SPARTA  | CPAF                             | Aug 94  | 487                       | 487           | 0       |
|  | Lincoln Lab   | PO                               | Mar 95  | 288                       | 288           | 0       |
|  | Aerojet (FO)  | CPAF                             | Oct 95  | 36,270                    | 6,161         | 0       |
|  | Nichols Research Corporation  |                                  |         | 19,420                    | 6,163         | 0       |
|  | <u>Support and Management Organizations</u>                                     |                                  |         | 1,528                     | 850           | 0       |
|  | Program Office Support  |                                  |         |                           |               |         |
|  | FFRDC   |                                  |         | 67                        |               | 0       |
|  | Dept Air Force  |                                  |         | 7,547                     | 1,217         | 0       |
|  |   |                                  |         | 6,989                     |               | 0       |
| Project 673615                                     |   |                                  |         | Exhibit R-3 (PE 0305911F) |               |         |
|  |   |                                  |         | Page 5 of 11 Pages        |               |         |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                           |  |                                  |                | DATE           | February 2000      |               |
|--|--|----------------------------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE              |                | PROJECT        |                    |               |
| 07 - Operational System Development  |  | 0305911F Defense Support Program |                | 673615         |                    |               |
| (U) <u>Performing Organizations Continued:</u>                               |  |                                  |                |                |                    |               |
| Test and Evaluation Organizations  |  |                                  |                |                |                    |               |
| Subtotals  |  |                                  |                |                |                    |               |
| Space-Based Space Surveillance operations ACTD (to be placed in 673624 BPAC) |  | Total Prior to FY 1999           | Budget FY 1999 | Budget FY 2000 | Budget to Complete | Total Program |
|  |  | 29,621                           | 1,400          | 6,161          | 0                  | 1,400         |
| Subtotal Product Development   |  | 14,603                           | 7,461          | 1,200          | 0                  | 49,406        |
| Subtotal Support and Management  |  |                                  | 1,600          | 1,217          | 0                  | 18,620        |
| Subtotal Test and Evaluation   |  |                                  |                |                |                    |               |
| Total Project  |  | 44,224                           | 10,461         | 7,361          | 0                  | 69,426        |

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Exhibit R-3 (PE 0305911F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                           |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |                           | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |                           | 0305911F Defense Support Program  |                  |                  |                  |                  |                  |                  |                  | 673624     |               |
| COST (\$ in Thousands)  |                           | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 673624  | Defense Support Program   | 3,510   | 0                | 4,082            | 2,082            | 2,081            | 0                | 0                | 0                | 1,854,564  |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The Defense Support Program (DSP) system provides a space-based surveillance system to detect and report missile and space launches and nuclear detonations in near real time during pre-, trans-, and post-attack periods. The DSP system consists of a constellation of satellites in geostationary orbits, fixed and mobile ground processing stations, one multi-purpose facility, and a ground communications network. DSP's primary mission is to provide strategic and tactical warning and limited attack assessment of a ballistic missile attack. DSP also detects and reports nuclear detonation events and provides information for theater warning and exploitation. This project funds changes associated with Year 2000 roll-over, ACTD, and DSP-to-SBIRS transition activities and EELV mission unique engineering integration.</p> |                           |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$300                     | Ground based calibration technology   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$100                     | Year 2000 rollover  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$3,606                   | SBIRS Transition Support  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$672                     | Program Management Support  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$232                     | Long Range Planning   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | (\$1,400)                 | Space-Based Space Surveillance operations ACTD (placed in BPAC 673615 by error, will be properly executed in BPAC 673624) |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$3,510                   | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                       | No activity   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                       | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2001 (\$ in Thousands) |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$2,082                   | Integration efforts for DSP 23 on Evolved Expandable Launch Vehicle (EELV)  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$2,000                   | Space-Based Space Surveillance Operations ACTD  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$4,082                   | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |                                  |                 |                 |                 |                 | DATE            | February 2000              |                   |
|--|---|----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------------------|-------------------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE              |                 |                 |                 |                 | PROJECT         | 673624                     |                   |
| 07 - Operational System Development                  |   | 0305911F Defense Support Program |                 |                 |                 |                 |                 |                            |                   |
| (U)  | <b>B. Project Change Summary</b>  |                                  |                 |                 |                 |                 |                 |                            |                   |
|  | \$4M FY00 funds transferred to support continued engineering task development for ALERT and engineering prototype, feasibility analysis, and developmental test and evaluation for Shield.  |                                  |                 |                 |                 |                 |                 |                            |                   |
|  | \$2.1M per year in FY01-FY03 funds integration of DSP 23 onto the EELV-Heavy launch vehicle.  |                                  |                 |                 |                 |                 |                 |                            |                   |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |                                  |                 |                 |                 |                 |                 |                            |                   |
|  |   | <u>FY 1999</u>                   | <u>FY 2000</u>  | <u>FY 2001</u>  | <u>FY 2002</u>  | <u>FY 2003</u>  | <u>FY 2004</u>  | <u>FY 2005</u>             | <u>Total Cost</u> |
|  |   | <u>Actual</u>                    | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u>            | <u>Complete</u>   |
| (U)  | AF RDT&E  |                                  |                 |                 |                 |                 |                 |                            |                   |
| (U)  | Other APPN  |                                  |                 |                 |                 |                 |                 |                            |                   |
| (U)  | Missile Procurement (PE 305911F, BA-05, P-28)   | 86,964                           | 108,342         | 106,356         | 113,770         | 100,528         | 30,335          | 35,577                     | 6,026             |
| (U)  | Other Procurement (PE 305911F, BA-65, P-N/A)  | 202                              | 14              | 6               | 0               | 0               | 0               | 0                          | 0                 |
| (U)  | Related RDT&E:  |                                  |                 |                 |                 |                 |                 |                            |                   |
| (U)  | PE 603441F - SBIRS Dem/Val  | 144,723                          | 0               | 0               | 0               | 0               | 0               | 0                          | 1,154,120         |
| (U)  | PE 604442F - SBIRS Low EMD  | 36,627                           | 225,566         | 241,021         | 306,530         | 617,662         | 763,362         | 486,840                    | 513,647           |
| (U)  | PE 604441F - SBIRS High EMD   | 508,473                          | 420,476         | 569,188         | 389,879         | 196,841         | 128,871         | 100,856                    | 356,475           |
| (U)  | <b>D. Acquisition Strategy</b>  |                                  |                 |                 |                 |                 |                 |                            | 3,492,030         |
|  | DSP has finished the production of satellites 19 through 23. Current contract efforts include support for Flight 20 launch and sustainment for post production storage testing, launch preparation, and on orbit testing. The Space Based Infrared Systems satellites will be the follow-on system to DSP starting in FY04. FY01-FY03 funds will be used to integrate DSP 23 on EELV. |                                  |                 |                 |                 |                 |                 |                            |                   |
| (U)  | <b>E. Schedule Profile</b>  |                                  |                 |                 |                 |                 |                 |                            |                   |
|  |   |                                  |                 |                 | <u>FY 1999</u>  |                 | <u>FY 2000</u>  | <u>FY 2001</u>             |                   |
| Project 673624                                       |   | Page 8 of 11 Pages               |                 |                 |                 |                 |                 | Exhibit R-2A (PE 0305911F) |                   |

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |                                      |                                  |   |   |   | DATE    | February 2000 |
|--|--------------------------------------|----------------------------------|---|---|---|---------|---------------|
| BUDGET ACTIVITY                                      |                                      | PE NUMBER AND TITLE              |   |   |   | PROJECT |               |
| 07 - Operational System Development                  |                                      | 0305911F Defense Support Program |   |   |   | 673624  |               |
| (U)  | <u>E. Schedule Profile Continued</u> |                                  |   |   |   |         |               |
| (U)  | Year 2000 DSP renovation             | 1                                | 2 | 3 | 4 | 1       | 2             |
| (U)  | DSP Satellite 23 delivery            | *                                |   |   |   |         |               |
| (U)  | DSP 19 Launch                        |                                  | * |   |   |         |               |
| (U)  | Ground based calibration technology  |                                  |   | * |   |         |               |
| (U)  | DSP 20 Launch                        |                                  |   |   |   | X       |               |
| (U)  | DSP 21 Launch                        |                                  |   |   |   |         |               |
| (U)  | DSP 22 Launch (Sep 02)               |                                  |   |   |   |         |               |
| (U)  | DSP 23 Launch (Sep 03)               |                                  |   |   |   | X       |               |

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Exhibit R-2A (PE 0305911F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                     |                |                        |                |                |                | DATE               | February 2000 |
|--|---|---|--------------------------|---------------------|----------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                     |                          |                     |                | PROJECT                |                |                |                |                    |               |
| 07 - Operational System Development                |   | 0305911F Defense Support Program        |                          |                     |                | 673624                 |                |                |                |                    |               |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Year 2000 roll-over activities  |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Long Range Planning   |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Space-Based Space Surveillance Operations ACTD*                                 |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Other Government Cost   |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | SBIRS Transition Support  |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Ground Based Calibration Technology   |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | DSP 23 Integration on EELV-Heavy  |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | Total   |   |                          |                     |                |                        |                |                |                |                    |               |
|  | *Funding of effort shared with BMDO, this causes the irregular funding profile  |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |   |                          |                     |                |                        |                |                |                |                    |               |
| (U)  | <u>Performing Organizations:</u>  |   |                          |                     |                |                        |                |                |                |                    |               |
|  | Contractor or Government  | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity | Project Office | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  | <u>Product Development Organizations</u>  |   |                          |                     |                |                        |                |                |                |                    |               |
|  | Previous DSP Contracts  |   |                          |                     |                |                        |                |                |                |                    |               |
|  | (1960's-1980's)   |   |                          |                     |                |                        |                |                |                |                    |               |
|  | Boeing  |   |                          | 6,300               | 6,300          | 0                      | 0              | 0              | 0              | 0                  | 1,536,317     |
|  | Aerojet*  | C/CPAF                                  | Oct 93                   | 25,719              | 25,719         | 0                      | 0              | 0              | 2,082          | 4,200              | 6,282         |
|  | Aerojet   | C/CPAF                                  | Sep 93                   | 9,025               | 9,025          | 25,719                 | 0              | 0              | 0              | 0                  | 25,719        |
|  | Aerojet   | C/CPFF                                  |                          | 25,743              | 25,743         | 9,025                  | 0              | 0              | 0              | 0                  | 9,025         |
|  | Aerojet   | C/CPAF                                  | Oct 95                   | 2,578               | 2,578          | 25,743                 | 0              | 0              | 0              | 0                  | 25,743        |
|  | Loral   | C/FPI/AF/CPF                            |                          | 28,137              | 37,732         | 2,578                  | 0              | 0              | 0              | 0                  | 2,578         |
|  | DOE   | P.O.                                    |                          | 10,724              | 10,724         | 37,732                 | 0              | 0              | 0              | 0                  | 37,732        |
|  | Loral   | C/CPAF                                  |                          | 22,975              | 22,975         | 10,724                 | 0              | 0              | 0              | 0                  | 10,724        |
|  |   |   |                          |                     |                | 22,975                 | 0              | 0              | 0              | 0                  | 22,975        |

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Exhibit R-3 (PE 0305911F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |         |                     |       |                        | DATE                             | February 2000  |                    | PROJECT       |        |
|--|---------|---------------------|-------|------------------------|----------------------------------|----------------|--------------------|---------------|--------|
| BUDGET ACTIVITY                                    |         | PE NUMBER AND TITLE |       |                        | 0305911F Defense Support Program |                |                    |               | 673624 |
| 07 - Operational System Development                |         |                     |       |                        |                                  |                |                    |               |        |
| (U) Performing Organizations Continued:            |         |                     |       |                        |                                  |                |                    |               |        |
| * EAC is also funded by other appropriations.      |         |                     |       |                        |                                  |                |                    |               |        |
| Support and Management Organizations               |         |                     |       |                        |                                  |                |                    |               |        |
| Various  |         |                     |       | 6,301                  | 0                                | 2,000          | 0                  | 8,301         |        |
| Aerojet  |         | 1,305               | 1,305 | 1,305                  | 0                                | 0              | 0                  | 1,305         |        |
| Aerojet/   |         |                     |       | 0                      | 0                                | 0              | 0                  | 0             |        |
| Consolidated                                       | May 96  | 2,518               | 2,518 | 2,518                  | 0                                | 0              | 0                  | 4,724         |        |
| FFRDC  |         | N/A                 | N/A   | 42,109                 | 0                                | 0              | 0                  | 42,109        |        |
| Other Gov't Cost                                   |         | N/A                 | N/A   | 33,732                 | 0                                | 0              | 0                  | 35,036        |        |
| TRW  |         | 9,872               | 9,872 | 9,872                  | 0                                | 0              | 0                  | 9,872         |        |
| TRW Consolidated                                   | May 96  | 292                 | 292   | 292                    | 0                                | 0              | 0                  | 292           |        |
| PRC  | Apr 94  | 7,579               | 7,579 | 7,579                  | 0                                | 0              | 0                  | 7,579         |        |
| SPARTA   | Aug 94  | 150                 | 150   | 150                    | 0                                | 0              | 0                  | 150           |        |
| Test and Evaluation Organizations                  |         |                     |       |                        |                                  |                |                    |               |        |
| Program Office Spprt                               | Various | N/A                 | N/A   | 68,101                 | 0                                | 0              | 0                  | 68,101        |        |
| Subtotals  |         |                     |       |                        |                                  |                |                    |               |        |
| Subtotal Product Development                       |         |                     |       | Total Prior to FY 1999 | Budget FY 1999                   | Budget FY 2000 | Budget to Complete | Total Program |        |
| Subtotal Support and Management                    |         |                     |       | 1,670,813              | 0                                | 0              | 4,200              | 1,677,095     |        |
| Subtotal Test and Evaluation                       |         |                     |       | 103,858                | 3,510                            | 0              | 0                  | 109,368       |        |
| Total Project                                      |         |                     |       | 68,101                 | 0                                | 0              | 0                  | 68,101        |        |
|  |         |                     |       | 1,842,772              | 3,510                            | 4,082          | 4,200              | 1,854,564     |        |

Project 673624

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Exhibit R-3 (PE 0305911F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                  |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|----------------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                                  | PE NUMBER AND TITLE                     |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                                  | 0305913F NUDET Detection System (Space) |                  |                  |                  |                  |                  |                  |                  | 672808     |               |
|  |                                  | FY 1999 Actual                          | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 672808   | Nuc Detonation Det Sys (sensors) | 12,766                                  | 14,224           | 17,088           | 17,322           | 18,451           | 23,277           | 21,752           | Continuing       | TBD        |               |
|  | Quantity of RDT&E Articles       | 0                                       | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p><b>(U) A. Mission Description</b></p> <p>The Nuclear Detonation (NUDET) Detection System (NDS) provides a worldwide, highly survivable capability to detect, locate, and report any nuclear detonations in the earth's atmosphere or in near space in near-real time. The NDS supports NUDET detection requirements for USSPACECOM (Integrated Tactical Warning and Attack Assessment [ITW/AA]), USSTRATCOM (Nuclear Force Management), and AFTAC (Treaty Monitoring). NDS consists of space and ground segments. The space segment consists of NUDET detection sensors on the Global Positioning System (GPS) satellites. The ground segment includes the Integrated Correlation and Display System (ICADS) and the Ground NDS Terminals (GNT).</p> <p>This NDS program element funds Research and Development of ICADS, GNT, and NDS analysis payload (NAP). ICADS provides a fixed ground receiving station. GNT provides a survivable ground receiving station. NAP improves existing NDS capability and will be integrated onto GPS Block IIR satellites 13-21. DOD also funds the development of the Electromagnetic Pulse (EMP) sensor for the Block IIR. The EMP sensor for GPS Block IIF is funded in the National Foreign Intelligence Program (NFIP).</p> <p><b>FY 1999 (\$ in Thousands)</b></p> <p>(U) \$10,084 Continued ICADS and GNT development</p> <p>(U) \$1,052 Continued NDS sensor on-orbit qualification</p> <p>(U) \$816 Completed NDS/NAP (NDS Analysis Package) program integration</p> <p>(U) \$100 Continued Space long range planning and analysis</p> <p>(U) \$714 Continued mission support requirements</p> <p>(U) \$12,766 Total</p> <p><b>FY 2000 (\$ in Thousands)</b></p> <p>(U) \$12,360 Continue ICADS and GNT development</p> <p>(U) \$1,090 Continue NDS sensor on-orbit qualification</p> <p>(U) \$108 Continued Space long range planning and analysis</p> <p>(U) \$666 Continue mission support requirements</p> |                                  |   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |   | DATE                      | February 2000 |
|---|---|---------------------------|---------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                     | PROJECT                   |               |
| 07 - Operational System Development   | 0305913F NUDET Detection System (Space) | 672808                    |               |
| (U) <u>A. Mission Description Continued</u>   |   |                           |               |
| (U) FY 2000 (\$ in Thousands) Continued   |   |                           |               |
| (U) \$14,224 Total  |   |                           |               |
| (U) FY 2001 (\$ in Thousands)   |   |                           |               |
| (U) \$15,156 Continue ICADS and GNT development   |   |                           |               |
| (U) \$1,123 Continue NDS sensor on-orbit qualification  |   |                           |               |
| (U) \$129 Continued Space long range planning and analysis  |   |                           |               |
| (U) \$680 Continue mission support requirement  |   |                           |               |
| (U) \$17,088 Total  |   |                           |               |
| (U) <u>B. Budget Activity Justification</u>   |   |                           |               |
| This program is in Budget Activity 7 - Operational System Development because it is a post-Milestone III program. |   |                           |               |
| (U) <u>C. Program Change Summary (\$ in Thousands)</u>  |   |                           |               |
| (U) Previous President's Budget (FY 2000 PBR)   | FY 1999                                 | FY 2000                   | FY 2001       |
| (U) Appropriated Value  | 13,050                                  | 14,430                    | 17,241        |
| (U) Adjustments to Appropriated Value   | 13,314                                  | 14,430                    |               |
| a. Congressional/General Reductions   | -264                                    | -15                       |               |
| b. Small Business Innovative Research   | -176                                    | -78                       |               |
| c. Omnibus or Other Above Threshold Reprogram   | -37                                     |                           |               |
| d. Below Threshold Reprogram  | -71                                     | -113                      |               |
| e. Rescissions  |   |                           |               |
| f. Other  |   |                           |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR   |   |                           |               |
| (U) Current Budget Submit/FY 2001 PBR   | 12,766                                  | 14,224                    | -153          |
| (U) Significant Program Changes:  |   |                           |               |
| -\$154K FY01 adjustment funded higher priority Air Force efforts.   |   |                           |               |
| Project 672808  |   | Exhibit R-2 (PE 0305913F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                   |   |                     |                     |                     |                     |                     |                     |            |
|---|-------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|
| BUDGET ACTIVITY   |                   | DATE                                    |                     | PROJECT             |                     |                     |                     |                     |            |
| 07 - Operational System Development   |                   | February 2000                           |                     | 672808              |                     |                     |                     |                     |            |
| PE NUMBER AND TITLE   |                   | 0305913F NUDET Detection System (Space) |                     |                     |                     |                     |                     |                     |            |
| D. Other Program Funding Summary (\$ in Thousands)  |                   |   |                     |                     |                     |                     |                     |                     |            |
|   | FY 1999<br>Actual | FY 2000<br>Estimate                     | FY 2001<br>Estimate | FY 2002<br>Estimate | FY 2003<br>Estimate | FY 2004<br>Estimate | FY 2005<br>Estimate | Cost to<br>Complete | Total Cost |
| (U) AF RDT&E  |                   |   |                     |                     |                     |                     |                     |                     |            |
| (U) Other APPN  |                   |   |                     |                     |                     |                     |                     |                     |            |
| (U) Operations & Maintenance,<br>(PE 0305913F, BA 1,<br>Operating Forces  | 5,355             | 5,851                                   | 8,070               | 9,359               | 8,612               | 8,187               | 9,102               | Continuing          | Continuing |
| (U) Missile Procurement, (PE<br>0305913F, BA 45 - Space and<br>Other Support, P-22)   | 2,780             | 1,547                                   | 1,478               | 1,507               | 1,539               | 1,568               | 1,601               | Continuing          | Continuing |
| (U) Other Procurement, (PE<br>0305913F, BA 63 -<br>Electronics and Telecom<br>Equipment, P-64)  | 1,265             | 3,459                                   | 2,674               | 8,443               | 7,957               | 12,677              | 11,876              | Continuing          | Continuing |
| (U) Related RDT&E:  |                   |   |                     |                     |                     |                     |                     |                     |            |
| (U) PE 305165F, Navstar GPS<br>(Space/Ground Segment)   | 101,587           | 107,451                                 | 250,197             | 209,114             | 181,291             | 132,711             | 101,958             | Continuing          | Continuing |
| (U) PE 305911F, Defense Support<br>Program  | 13,971            | 7,361                                   | 11,462              | 6,418               | 6,697               | 0                   | 0                   | 0                   | 1,923,990  |
| E. Acquisition Strategy   |                   |   |                     |                     |                     |                     |                     |                     |            |
| The NDS Acquisition Strategy is to develop and procure components to sustain the U. S. NDS capability for the GPS Block IIR and IIF satellites. Funding is sent by Military Interdepartmental Purchase Request (MIPR) from DoD and Department of Energy (DoE) to Sandia and Los Alamos National Laboratories on an existing DOE contract. |                   |   |                     |                     |                     |                     |                     |                     |            |
| F. Schedule Profile   |                   |   |                     |                     |                     |                     |                     |                     |            |
|   |                   |   |                     | FY 1999             |                     | FY 2000             |                     | FY 2001             |            |
| Project 672808  |                   |   |                     |                     |                     |                     |                     |                     |            |
| Page 3 of 6 Pages   |                   |   |                     |                     |                     |                     |                     |                     |            |
| Exhibit R-2 (PE 0305913F)   |                   |   |                     |                     |                     |                     |                     |                     |            |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                    |                        |                |                |                |                    |               |
|--|--|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                     |                          | DATE                    |                    | PROJECT                |                |                |                |                    |               |
| 07 - Operational System Development                |  | 0305913F NUDET Detection System (Space) |                          |                         |                    | 672808                 |                |                |                |                    |               |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                    |                        |                |                |                |                    |               |
| (U)  | ICADS and GNT Development  | FY 1999                                 | FY 2000                  | FY 2001                 |                    |                        |                |                |                |                    |               |
| (U)  | NDS Sensor On-orbit Qualification  | 10,084                                  | 12,360                   | 15,156                  |                    |                        |                |                |                |                    |               |
| (U)  | NDS/NAP Program Integration  | 1,052                                   | 1,090                    | 1,123                   |                    |                        |                |                |                |                    |               |
| (U)  | Space long range planning and analysis                                   | 816                                     | 0                        | 0                       |                    |                        |                |                |                |                    |               |
| (U)  | Mission support requirements   | 100                                     | 108                      | 129                     |                    |                        |                |                |                |                    |               |
| (U)  | Total  | 714                                     | 666                      | 680                     |                    |                        |                |                |                |                    |               |
| (U)  |  | 12,766                                  | 14,224                   | 17,088                  |                    |                        |                |                |                |                    |               |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                    |                        |                |                |                |                    |               |
| (U)  | Performing Organizations:  |   |                          |                         |                    |                        |                |                |                |                    |               |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  | Product Development Organizations  |   |                          |                         |                    |                        |                |                |                |                    |               |
|  | ICADS: Sandia National Labs  | MIPR                                    | Jan 96                   | Continuing              | Continuing         | 32,318                 | 9,343          | 11,509         | 14,287         | Continuing         | TBD           |
|  | GNT: Intermetrics  | CPFF                                    | Dec 93                   | 1,262                   | 1,262              | 1,262                  | 0              | 0              | 0              | 0                  | 1,262         |
|  | SNL  | MIPR                                    | Jan 96                   | Continuing              | Continuing         | 11,873                 | 0              | 0              | 0              | 0                  | 11,873        |
|  | SAIC (Intg/Grd Supt)   | Time/Matls                              | Dec 95                   | Continuing              | Continuing         | 4,344                  | 1,123          | 1,146          | 1,172          | Continuing         | TBD           |
|  | Combined GOSC/NAP: Lockheed Martin                                       | FFP                                     | Oct 97                   | 3,633                   | 3,633              | 6,166                  | 816            | 0              | 0              | 0                  | 6,982         |
|  | SNL  | MIPR                                    | Oct 97                   | Continuing              | Continuing         | 200                    | 0              | 0              | 0              | 0                  | 200           |
|  | SAIC   | Time/Matl                               | Dec97                    | 432                     | 432                | 432                    | 0              | 0              | 0              | 0                  | 432           |
|  | W-Sensor: SRI (Stanford Rsch Inst.)                                      | CPFF                                    | Aug 94                   | 415                     | 415                | 415                    | 0              | 0              | 0              | 0                  | 415           |
|  | SNL  | MIPR                                    | Oct 94                   | 399                     | 399                | 399                    | 0              | 0              | 0              | 0                  | 399           |
|  | Los Alamos Natl Lab  | MIPR                                    | Jan 96                   | Continuing              | Continuing         | 4,077                  | 1,052          | 1,090          | 1,123          | Continuing         | TBD           |
| Project 672808                                     |  |   |                          |                         |                    |                        |                |                |                |                    |               |
| Page 5 of 6 Pages                                  |  |   |                          |                         |                    |                        |                |                |                |                    |               |
| Exhibit R-3 (PE 0305913F)                          |  |   |                          |                         |                    |                        |                |                |                |                    |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |          |         |            |            |   |         |         |         |            |         |
|--|----------|---------|------------|------------|---|---------|---------|---------|------------|---------|
| BUDGET ACTIVITY                                    |          |         |            |            | DATE                                    |         | PROJECT |         |            |         |
| 07 - Operational System Development                |          |         |            |            | February 2000                           |         | 672808  |         |            |         |
| PE NUMBER AND TITLE                                |          |         |            |            | 0305913F NUDET Detection System (Space) |         |         |         |            |         |
| (U) Performing Organizations Continued:            |          |         |            |            |   |         |         |         |            |         |
| Support and Management Organizations               |          |         |            |            |   |         |         |         |            |         |
| Mission Support                                    | Multiple | N/A     | Continuing | Continuing | 3,529                                   | 171     | 371     | 377     | Continuing | TBD     |
| Long range planning                                | Multiple | N/A     | Continuing | Continuing | 73                                      | 100     | 108     | 129     | Continuing | TBD     |
| Prog Contractual Spt.                              | Multiple | Various | 1,534      | 1,534      | 1,534                                   | 161     | 0       | 0       | 0          | 1,695   |
| Test and Evaluation Organizations                  |          |         |            |            |   |         |         |         |            |         |
| Hill AFB Utah                                      |          |         | 9          | 9          | 9                                       |         |         |         |            | 9       |
| (U) Government Furnished Property:                 |          |         |            |            |   |         |         |         |            |         |
| Contract   |          |         |            |            |   |         |         |         |            |         |
| Method/Type Award or                               |          |         |            |            |   |         |         |         |            |         |
| or Funding Obligation                              |          |         |            |            |   |         |         |         |            |         |
| Item   | Vehicle  | Date    | Delivery   | Date       | Total Prior                             | Budget  | Budget  | Budget  | Budget to  | Total   |
| Description  |          |         |            |            | to FY 1999                              | FY 1999 | FY 2000 | FY 2001 | Complete   | Program |
| Product Development Property                       |          |         |            |            |   |         |         |         |            |         |
| N/A  |          |         |            |            |   |         |         |         |            |         |
| Support and Management Property                    |          |         |            |            |   |         |         |         |            |         |
| N/A  |          |         |            |            |   |         |         |         |            |         |
| Test and Evaluation Property                       |          |         |            |            |   |         |         |         |            |         |
| N/A  |          |         |            |            |   |         |         |         |            |         |
| Subtotals  |          |         |            |            |   |         |         |         |            |         |
| Subtotal Product Development                       |          |         |            |            | Total Prior                             | Budget  | Budget  | Budget  | Budget to  | Total   |
|  |          |         |            |            | to FY 1999                              | FY 1999 | FY 2000 | FY 2001 | Complete   | Program |
|  |          |         |            |            | 61,486                                  | 12,334  | 13,745  | 16,582  | TBD        | TBD     |
| Subtotal Support and Management                    |          |         |            |            | 5,136                                   | 432     | 479     | 506     | TBD        | TBD     |
| Subtotal Test and Evaluation                       |          |         |            |            | 9                                       |         |         |         |            | 9       |
| Total Project                                      |          |         |            |            | 66,631                                  | 12,766  | 14,224  | 17,088  | TBD        | TBD     |

Project 672808

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Exhibit R-3 (PE 0305913F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                 |   |                  |                  |                  |                  |                  |                  |                  | DATE                      | February 2000 |
|--|---------------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|---------------|
| BUDGET ACTIVITY  |                                 | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT                   |               |
| 07 - Operational System Development  |                                 | 0305917F Space Architect  |                  |                  |                  |                  |                  |                  |                  | 674746                    |               |
| COST (\$ in Thousands)   |                                 | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                |               |
| 674746   | AF/National Program Cooperation | 12,896  | 10,882           | 0                | 0                | 0                | 0                | 0                | Continuing       | TBD                       |               |
|  | Quantity of RDT&E Articles      | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                         |               |
| FY 2001 funding for AFNPC is being requested under PE 0603856F.  |                                 |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| <p>Note: In FY 2000, per Congressional direction, the National Security Space Architect (NSSA), PE 0305917F, was merged with the Air Force/NRO Partnership, PE 0603856F, into a new entity entitled 'AF/National Program Cooperation (AFNPC)'. FY00 AFNPC funding was executed in this PE, 0305917F. In FY 2001 the NSSA moves to defense-wide PE 0305190D, 'C3I Intelligence Programs'; remaining AFNPC efforts move to PE 0603856F, where FY 2001 funding is requested.</p>  |                                 |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| <p>(U) <b>A. Mission Description</b></p> <p>Detailed descriptions for the AF/National Program Cooperation are in PE 0603856F, where FY 2001 funds for that effort are requested. Efforts that will remain part of AFNPC in FY 2001 are detailed there; the National Security Space Architect, part of AFNPC for FY 2000 only, is detailed below.</p> <p>The Under Secretary of Defense for Acquisition and Technology established the Department of Defense (DoD) Office of the Space Architect (OSA) to consolidate DoD space system architecture development responsibilities into a single organization. The OSA was one of DoD's responses to congressional concerns regarding DoD space management. In July 1998, a Memorandum of Understanding was signed by the Secretary of Defense and Director of Central Intelligence to incorporate the architectural activities of the National Reconnaissance Office (NRO). The name was changed to National Security Space Architect (NSSA). This organization works to integrate space system architectures, eliminate unnecessary vertical stovepiping of space programs, and achieve efficiencies in acquisition and future operations through space program integration, thereby improving space support to a variety of customers. The NSSA obtains direct support from various space planning and development organizations across the federal government and industry for space architecture planning and development. Funding in this document incorporates DoD requirements only. NRO requirements and funding to support the NSSA efforts are not included in this program element.</p> |                                 |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | FY 1999 (\$ in Thousands)       |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$1,851                         | Space Weather Architecture (SWx) Study and Transition Planning  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$544                           | Space Control and MILSATCOM Architecture Tracking   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$605                           | Satellite Operations (SATOPS) Architecture Transition Planning  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$5,989                         | Mission Information Management (MIM) Architecture Development Team (ADT)  |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$3,162                         | Core Analysis (Analysis, Modeling and Simulation, Cost, Spectrum) and Core System Engineering and Integration (SE&I) (Community Coordination, Strategic Planning, Process Support and Information Management) |                  |                  |                  |                  |                  |                  |                  |                           |               |
| Project 674746   |                                 | Page 1 of 6 Pages   |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2 (PE 0305917F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  | DATE                      | February 2000 |
|---|--|---------------------------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE  | PROJECT                   |               |
| <b>07 - Operational System Development</b>          | <b>0305917F Space Architect</b>  | <b>674746</b>             |               |
| (U) <b>A. Mission Description Continued</b>         |  |                           |               |
| (U) <b>FY 1999 (\$ in Thousands) Continued</b>      |  |                           |               |
| (U) \$140   | Other Architecture Studies and Architecture Study Planning   |                           |               |
| (U) \$605   | National Security Space Master Plan and National Security Space Roadmap Development and Update (included in 'Other Architecture...' in the FY 2000 RDT&E Budget Justification Exhibit for this Program Element |                           |               |
| (U) \$12,896  | Total  |                           |               |
| (U) <b>FY 2000 (\$ in Thousands)</b>                |  |                           |               |
| (U) \$2,324   | Mission Information Management (MIM) ADT   |                           |               |
| (U) \$456   | Space Weather (SWx), Space Control and MILSATCOM Architecture Tracking   |                           |               |
| (U) \$2,886   | Core Capabilities (Space Architecture Engineering, Analytic Methods and Tools, Collaboration Technologies, Process Support, and Information Management)  |                           |               |
| (U) \$1,686   | Architectural ADTs/Studies Directed by Stakeholders (including Hyperspectral Strategy Study) and Architecture Study Planning   |                           |               |
| (U) \$355   | Satellite Operations Architecture Transition Planning and Tracking (part of 'Documentation and Support' item in FY 2000 budget justification document)   |                           |               |
| (U) \$1,115   | National Security Space Master Plan and National Security Space Roadmap Development and Update (part of 'Documentation and Support' item in FY 2000 budget justification document)                             |                           |               |
| (U) \$1,337   | Technical support to the AF/NRO Integration Planning Group, ANIPG (included in PE 0603856F in the FY 2000 RDT&E Budget Item Justification)   |                           |               |
| (U) \$723   | Developing processing capabilities to exploit SBIRS sensor data for technical intelligence (included in PE 0603856F in the FY 2000 RDT&E Budget Item Justification)  |                           |               |
| (U) \$10,882  | Total  |                           |               |
| (U) <b>FY 2001 (\$ in Thousands)</b>                |  |                           |               |
| (U) \$0   | No Activity  |                           |               |
| (U) \$0   | Total  |                           |               |
|   | *FY 2001 NSSA funding is requested in defense-wide PE 0305190D; remaining AFNPC funding is requested in justification for PE 0603856F.   |                           |               |
| (U) <b>B. Budget Activity Justification</b>         |  |                           |               |
|   | This program is in Budget Activity 7 because the architecture studies affect the design and acquisition of systems to be developed.  |                           |               |
| Project 674746                                      |  | Page 2 of 6 Pages         |               |
|   |  | Exhibit R-2 (PE 0305917F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                          |          | DATE                      | February 2000 |          |          |          |                  |
|---|---|--------------------------|----------|---------------------------|---------------|----------|----------|----------|------------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE      |          | PROJECT                   |               |          |          |          |                  |
| 07 - Operational System Development                 |   | 0305917F Space Architect |          | 674746                    |               |          |          |          |                  |
| (U)   | C. Program Change Summary (\$ in Thousands)   |                          |          |                           | Total Cost    |          |          |          |                  |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999                  | FY 2000  | FY 2001                   | TBD           |          |          |          |                  |
| (U)   | Appropriated Value  | 13,560                   | 9,898    | 10,470                    |               |          |          |          |                  |
| (U)   | Adjustments to Appropriated Value   | 13,714                   | 10,882   |                           |               |          |          |          |                  |
|   | a. Congressional/General Reductions   | -154                     |          |                           |               |          |          |          |                  |
|   | b. Small Business Innovative Research   | -428                     |          |                           |               |          |          |          |                  |
|   | c. Omnibus or Other Above Threshold Reprogram   | -164                     |          |                           |               |          |          |          |                  |
|   | d. Below Threshold Reprogram  | -72                      |          |                           |               |          |          |          |                  |
|   | e. Rescissions  |                          |          |                           |               |          |          |          |                  |
|   | f. Other  |                          |          |                           | TBD           |          |          |          |                  |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |                          |          | -10,470                   |               |          |          |          |                  |
| (U)   | Current Budget Submit/FY 2001 PBR   | 12,896                   | 10,882   | 0                         | TBD           |          |          |          |                  |
| (U)   | Significant Program Changes:  |                          |          |                           |               |          |          |          |                  |
|   | FY 1999: \$164K reprogrammed to support higher Air Force priorities.  |                          |          |                           |               |          |          |          |                  |
|   | FY 2000: Per Congressional direction, the National Security Space Architect (NSSA), PE 0305917F, was merged with the AF/NRO Partnership, PE 0603856F, into a new entity entitled 'AF/National Program Cooperation (AFNPC). AFNPC funding was executed in this PE for FY 2000. |                          |          |                           |               |          |          |          |                  |
|   | FY 2001 forward: NSSA funding moves to defense-wide PE 0305190D. AFNPC funding moves to PE 0603856F.  |                          |          |                           |               |          |          |          |                  |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  |                          |          |                           | Total Cost    |          |          |          |                  |
|   |   | FY 1999                  | FY 2000  | FY 2001                   | FY 2002       | FY 2003  | FY 2004  | FY 2005  | Cost to Complete |
|   |   | Actual                   | Estimate | Estimate                  | Estimate      | Estimate | Estimate | Estimate |                  |
| (U)   | AF RDT&E  |                          |          |                           |               |          |          |          |                  |
| (U)   | N/A   |                          |          |                           |               |          |          |          |                  |
| (U)   | Other APPN  |                          |          |                           |               |          |          |          |                  |
| (U)   | Intelligence Community*   |                          |          |                           |               |          |          |          |                  |
|   | *Not available  |                          |          |                           |               |          |          |          |                  |
| Project 674746                                      |   | Page 3 of 6 Pages        |          | Exhibit R-2 (PE 0305917F) |               |          |          |          |                  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                          | DATE                      | February 2000 |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
|---|--------------------------|---------------------------|---------------|---|---------|---|---------|--|---------|--|--|---|---|---|---|---|---|---|--|--|--|--|--|--|----------------------|---|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|---|--|--|---|--|--|--|-------------------|--|--|--|--|--|--|---|--|--|--|--|--|---|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE      | PROJECT                   |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| 07 - Operational System Development   | 0305917F Space Architect | 674746                    |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| <p>(U) <b>E. Acquisition Strategy</b><br/>           The acquisition strategy for the National Security Space Architect is detailed below; strategies for other AFNPC efforts are detailed in the budget justification for PE 0603856F.</p> <p>RDT&amp;E funds will be used to obtain infrastructure support and direct support from various space planning and development organizations across the DoD and industry, including Federally Funded Research &amp; Development Centers (FFRDCs) and contracted System Engineering and Technical Assistance in direct support of DoD space architecture planning and development. Funds will be applied to existing contract vehicles.</p> <ul style="list-style-type: none"> <li>-- As primary support, the Space Architect plans to use two existing Space &amp; Missile Center (SMC) contracts for technical support:</li> <li>-- Engineering, Analysis, Design and Development Contract; Science Applications International Corporation (SAIC)</li> <li>-- Engineering, Analysis and Design Contract; Nichols Research Corporation</li> <li>-- These contracts currently provide support to the Air Force SMC long-range planning, conceptual development, and engineering analysis and assessment efforts.</li> </ul>   |                          |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| <p>(U) <b>F. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) SATOPS Transition/Implementation Plan Start</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) MIM Initiate ADT</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Position/Navigation Frequency Allocation Determination</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Space Weather Architecture - Phase II Completion</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) SATOPS Transition/Implementation Plan Complete</td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Space Weather Architecture - Final Report Published</td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) MIM 99 Report</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Hyperspectral Strategy Study Completion</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table> |                          |                           |               |   | FY 1999 |   | FY 2000 |  | FY 2001 |  |  | 1 | 2 | 3 | 4 | 1 | 2 | (U) SATOPS Transition/Implementation Plan Start |  |  |  |  |  |  | (U) MIM Initiate ADT | * |  |  |  |  |  | (U) Position/Navigation Frequency Allocation Determination | * |  |  |  |  |  | (U) Space Weather Architecture - Phase II Completion |  |  |  |  |  |  | (U) SATOPS Transition/Implementation Plan Complete |  | * |  |  |  |  | (U) Space Weather Architecture - Final Report Published |  |  | * |  |  |  | (U) MIM 99 Report |  |  |  |  |  |  | (U) Hyperspectral Strategy Study Completion |  |  |  |  |  | X |
|   | FY 1999                  |                           | FY 2000       |   | FY 2001 |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
|   | 1                        | 2                         | 3             | 4 | 1       | 2 |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) SATOPS Transition/Implementation Plan Start   |                          |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) MIM Initiate ADT  | *                        |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) Position/Navigation Frequency Allocation Determination  | *                        |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) Space Weather Architecture - Phase II Completion  |                          |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) SATOPS Transition/Implementation Plan Complete  |                          | *                         |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) Space Weather Architecture - Final Report Published   |                          |                           | *             |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) MIM 99 Report   |                          |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| (U) Hyperspectral Strategy Study Completion   |                          |                           |               |   |         | X |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| <p>* = completed event<br/>           X = planned event</p> <p>*Schedule events for the NSSA are above; schedule events for AFNPC efforts moving to PE 0603856F in FY 2001 are noted in the budget justification document for that PE.</p>  |                          |                           |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |
| Project 674746  |                          | Exhibit R-2 (PE 0305917F) |               |   |         |   |         |  |         |  |  |   |   |   |   |   |   |   |  |  |  |  |  |  |                      |   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |  |  |  |   |  |  |   |  |  |  |                   |  |  |  |  |  |  |   |  |  |  |  |  |   |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          | DATE                    | PROJECT            |
|--|---|---|--------------------------|-------------------------|--------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                     |                          |                         |                    |
| 07 - Operational System Development                |   | 0305917F Space Architect                |                          | February 2000<br>674746 |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)   | FY 1999                                 | FY 2000                  | FY 2001                 |                    |
| (U)  | Architecture Tracking and Transition Planning   | 1,149                                   | 811                      |                         |                    |
| (U)  | Space Weather Architecture  | 1,851                                   | 0                        |                         |                    |
| (U)  | National Security Space Master Plan and Roadmap   | 605                                     | 1,115                    |                         |                    |
| (U)  | Mission Information Management  | 5,989                                   | 2,324                    |                         |                    |
| (U)  | Studies/ADTs Directed by Stakeholders and Study Planning  | 140                                     | 1,686                    |                         |                    |
| (U)  | Core Capabilities & Analysis  | 3,162                                   | 2,886                    |                         |                    |
| (U)  | Technical support to the AF/NRO Integration Planning Group                                      |   | 723                      |                         |                    |
| (U)  | Develop processing capability to exploit SBIRS data for the technical intelligence (TI) mission |   | 1,337                    |                         |                    |
| (U)  | Total   | 12,896                                  | 10,882                   |                         |                    |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands)                        |   |                          |                         |                    |
| (U)  | Performing Organizations:   |   |                          |                         |                    |
|  | Contractor or Government Performing Activity  | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC |
|  | Product Development Organizations   |   |                          |                         |                    |
|  | SMC   | MIPR                                    | 12/98                    | TBD                     | TBD                |
|  | Support and Management Organizations  |   |                          |                         |                    |
|  | Aerospace   | C/CPAF                                  | 1993                     | N/A                     | N/A                |
|  | TASC  | C/CPAF                                  | 1995                     | N/A                     | N/A                |
|  | MITRE   | C/CPAF                                  | 1993                     | N/A                     | N/A                |
|  | Misc Contracts  | Various                                 | Various                  | N/A                     | N/A                |
|  | Misc In-House   | Various                                 | Various                  | N/A                     | N/A                |
|  | NRC   | C/CPAF                                  | 1997                     | N/A                     | N/A                |
|  | SAIC  | C/CPAF                                  | 1997                     | N/A                     | N/A                |
|  | ANIPG   | MIPR                                    | 10/98                    | Continuing              | Continuing         |
|  | Test and Evaluation Organizations   |   |                          |                         |                    |
|  | None  |   |                          |                         |                    |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                          |          |         |         |         |           |         |  | DATE | February 2000 |
|--|-------------|--------------------------|----------|---------|---------|---------|-----------|---------|--|------|---------------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE      |          |         |         | PROJECT |           | 674746  |  |      |               |
| 07 - Operational System Development                |             | 0305917F Space Architect |          |         |         |         |           |         |  |      |               |
| (U) Government Furnished Property:                 |             |                          |          |         |         |         |           |         |  |      |               |
| Contract   |             |                          |          |         |         |         |           |         |  |      |               |
| Item   | Method/Type | Award or                 | Delivery | Budget  | Budget  | Budget  | Budget to | Total   |  |      |               |
| Description  | or Funding  | Obligation               | Date     | FY 1999 | FY 2000 | FY 2001 | Complete  | Program |  |      |               |
| Product Development Property                       | Vehicle     |                          |          |         |         |         |           |         |  |      |               |
| None   |             |                          |          |         |         |         |           |         |  |      |               |
| Support and Management Property                    |             |                          |          |         |         |         |           |         |  |      |               |
| None   |             |                          |          |         |         |         |           |         |  |      |               |
| Test and Evaluation Property                       |             |                          |          |         |         |         |           |         |  |      |               |
| None   |             |                          |          |         |         |         |           |         |  |      |               |
| Subtotals  |             |                          |          |         |         |         |           |         |  |      |               |
| Subtotal Product Development                       |             |                          |          | 13,408  | 10,159  |         | 0         | 36,463  |  |      |               |
| Subtotal Support and Management                    |             |                          |          |         |         |         |           |         |  |      |               |
| Subtotal Test and Evaluation                       |             |                          |          | 13,408  | 10,882  |         | 0         | 37,186  |  |      |               |
| Total Project                                      |             |                          |          |         |         |         |           |         |  |      |               |

Project 674746
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Exhibit R-3 (PE 0305917F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)      |                |                  |                  |                  |  |                  |                  |                  |            | DATE | February 2000 |
|--|----------------|------------------|------------------|------------------|--|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY  |                |                  |                  |                  | PE NUMBER AND TITLE                      |                  |                  |                  |            |      |               |
| 07 - Operational System Development                      |                |                  |                  |                  | 0308601F Modeling and Simulation Support |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)                                   | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate                         | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost                          | 1,038          | 0                | 1,177            | 1,218            | 1,317                                    | 1,343            | 1,370            | Continuing       | TBD        |      |               |
| 671011 Legacy Model Transition (LMT)                     | 355            | 0                | 386              | 393              | 402                                      | 410              | 418              | Continuing       | TBD        |      |               |
| 674566 Executive Agent for Air/Space Natural Environment | 683            | 0                | 791              | 825              | 915                                      | 933              | 952              | Continuing       | TBD        |      |               |
| Quantity of RDT&E Articles                               | 0              | 0                | 0                | 0                | 0  | 0                | 0                | Continuing       | TBD        |      |               |

Congress eliminated FY00 funding. The Air Force is in the process of consolidating small dollar Modeling, Simulation, and Analysis (MS&A) R&D programs (PE 38601F - 'Modeling & Simulation Support' Budget Activity 07 RDT&E (3600 appn.)) under PE 27601F - 'USAF Modeling and Simulation'. This will meet the intent of the House action to eliminate smaller PEs and provide a more cohesive, manageable USAF Modeling and Simulation development effort.

(U) **A. Mission Description**

This PE includes funding to support an organized growth and management of modeling and simulation (M&S) systems as the Air Force transitions from numerous legacy models and simulations to emerging DoD standard models and architecture. Numerous models currently exist and are being modified or developed for a broad range of areas including acquisition, analysis, test and evaluation, and training. The Joint Model Transition (JMT) Program (formerly known as the Legacy Model Transition) funds the upgrades to selected R&D models through a board process. The selection process allows the board to influence the direction of legacy model development and interaction for the entire modeling and simulation community. Emphasis is placed on joint applicability and acceptance. The Executive Agent for Air & Space Natural Environment (ASNE) serves the M&S community as subject matter experts for ASNE M&S databases (including relevant standards), dynamic processes, and other applications. This enables the major Joint simulation systems (i.e., Joint Warfare Simulation (JWARS), Joint Simulation System (JSIMS), Joint Modeling and Simulation System (JMASS), and Joint and Service component programs (i.e., Joint Strike Fighter (JSF), Ballistic Missile Defense Organization (BMDO), etc.) to represent the air and space natural environment rapidly, thoroughly, and consistently in a manner that promotes cost-effectiveness, ready access, interoperability, re-use, and confidence. Primary users will be unified commanders and service components for use in joint or service-specific exercises involving air, ground, sea, and space campaigns.

All FY02-07 RDT&E funding in PE: 38601F - 'Modeling and Simulation Support' will be transferred to PE: 27601F - 'USAF Modeling and Simulation'. In the interim, FY01 RDT&E funding in PE: 38601F is needed to continue integrating and developing numerous AF models and simulations into emerging DoD standard models and architecture. Added, FY01 PE: 38601 RDT&E funding provides modeling and simulation development efforts to digitally represent air and space natural environments integrated into the major Joint simulation systems (ie. Joint Warfare Simulation (JWARS), Joint Simulation System (JSIMS), Joint Modeling and Simulation System

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   |         | DATE    | February 2000 |
|--|---|---------|---------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                             |         |         |               |
| <b>07 - Operational System Development</b>   | <b>0308601F Modeling and Simulation Support</b> |         |         |               |
| (U) <b>A. Mission Description Continued</b><br>(IMASS)).   |   |         |         |               |
| (U) <b>B. Budget Activity Justification</b><br>This program is in budget activity 7 - Operational System Development, because these funds support development activity for the AF as executive agent for air/space natural environment and continued development and integration of AF models in the Joint Model Transition (JMT) program. |   |         |         |               |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b>   |   |         |         |               |
| (U) Previous President's Budget (FY 2000 PBR)  |   | FY 1992 | FY 2000 | FY 2001       |
| (U) Appropriated Value   |   | 1,090   | 1,069   | 1,177         |
| (U) Adjustments to Appropriated Value  |   | 1,093   |         |               |
| a. Congressional/General Reductions  |   | -3      |         |               |
| b. Small Business Innovative Research  |   | -30     |         |               |
| c. Omnibus or Other Above Threshold Reprogram  |   | -16     |         |               |
| d. Below Threshold Reprogram   |   | -6      |         |               |
| e. Rescissions   |   |         |         |               |
| f. Other   |   |         |         |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |   |         |         |               |
| (U) Current Budget Submit/FY 2001 PBR  |   | 1,038   |         | 1,177         |
| (U) <b>Significant Program Changes:</b><br>FY00 funding eliminated.  |   |         |         | TBD           |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |  |                  |                  |                  |                  |                            |                  |                  | DATE       |  | February 2000 |  |
|--|--|--|------------------|------------------|------------------|------------------|----------------------------|------------------|------------------|------------|--|---------------|--|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE  |                  |                  |                  |                  | PROJECT                    |                  |                  |            |  |               |  |
| 07 - Operational System Development                  |  | 0308601F Modeling and Simulation Support   |                  |                  |                  |                  | 671011                     |                  |                  |            |  |               |  |
| COST (\$ in Thousands)                               |  | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate           | FY 2005 Estimate | Cost to Complete | Total Cost |  |               |  |
| 671011   | Legacy Model Transition (LMT)  | 355  | 0                | 386              | 393              | 402              | 410                        | 418              | Continuing       | TBD        |  |               |  |
| (U)  | <b>A. Mission Description</b>  |  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
|  | Numerous models are being developed for a broad range of areas including acquisition, analysis, test and evaluation, and training. The Joint Model Transition (JMT) Program (formerly known as Legacy Model Transition) supports the development and upgrade of R&D models selected through a board process. The selection process allows the board to influence the direction of model development and integration for the modeling and simulation community. Emphasis is placed on joint applicability and acceptance. All FY02-07 RDT&E funding in PE: 38601F will be transferred to PE: 27601F, titled 'USAF Modeling and Simulation'. |  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | <u>FY 1999 (\$ in Thousands)</u>   |  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$162  | Develop and Integrate service analysis models into next generation joint models.   |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$128  | Requirements/cost-benefit analysis for Next Generation Mission Model (NGMM).   |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$65   | Develop comprehensive Digital System Models (DSMs) to support Analysis of Alternatives (AoAs) for potential development programs. DSMs digitally represent weapon system platforms and are used to evaluate existing platform capabilities against new threats, ability to upgrade weapon systems to satisfy new requirements, etc. Results of AoAs using DSMs are used as a decision tool to determine future weapon system developments and/or upgrades. |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$355  | Total  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | <u>FY 2000 (\$ in Thousands)</u>   |  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$0  | No Activity  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$0  | Total  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | <u>FY 2001 (\$ in Thousands)</u>   |  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$114  | Develop and integrate service analysis models into next generation joint models.   |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$100  | Requirements/cost-benefit analysis for Next Generation Mission Model (NGMM).   |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$172  | Develop comprehensive Digital System Models (DSMs) to support Analysis of Alternatives (AoAs) for potential development programs. DSMs digitally represent weapon system platforms and are used to evaluate existing platform capabilities against new threats, ability to upgrade weapon systems to satisfy new requirements, etc. Results of AoAs using DSMs are used as a decision tool to determine future weapon system developments and/or upgrades. |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| (U)  | \$386  | Total  |                  |                  |                  |                  |                            |                  |                  |            |  |               |  |
| Project 671011                                       |  | Page 3 of 8 Pages  |                  |                  |                  |                  | Exhibit R-2A (PE 0308601F) |                  |                  |            |  |               |  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |         |          |          |          |          |          |  |                  |            |
|---|---------|----------|----------|----------|----------|----------|--|------------------|------------|
| BUDGET ACTIVITY   |         |          |          |          |          |          | DATE                                     | February 2000    |            |
| BUDGET ACTIVITY   |         |          |          |          |          |          | PE NUMBER AND TITLE                      | PROJECT          |            |
| 07 - Operational System Development   |         |          |          |          |          |          | 0308601F Modeling and Simulation Support | 671011           |            |
| (U) <b>B. Project Change Summary</b>  |         |          |          |          |          |          |  |                  |            |
| (U) <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |         |          |          |          |          |          |  |                  |            |
|   | FY 1999 | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005                                  | Cost to Complete | Total Cost |
|   | Actual  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate                                 |                  |            |
| (U) AF RDT&E  |         |          |          |          |          |          |  |                  |            |
| (U) Other APPN  |         |          |          |          |          |          |  |                  |            |
| N/A   |         |          |          |          |          |          |  |                  |            |
| (U) <b>D. Acquisition Strategy</b>  |         |          |          |          |          |          |  |                  |            |
| The funds are provided to the Office of Aerospace Studies (OAS), Kirtland AFB, NM, for contract actions in the development of the Next Generation Mission Model (NGMM), Joint Model Transition Plan, and Analysis of Alternatives (AoA) studies for analysis models and digital system models. OAS will oversee a prioritization process for contract selection and development effort. |         |          |          |          |          |          |  |                  |            |
| (U) <b>E. Schedule Profile</b>  |         |          |          |          |          |          |  |                  |            |
|   |         |          |          | FY 1999  |          |          | FY 2000                                  |                  | FY 2001    |
|   | 1       | 2        | 3        | 4        | 1        | 2        | 3  | 4                |            |
| (U) Fund Next Generation Mission Model project (Phase I completed 1QFY99)   | *       |          |          |          |          |          |  | X                |            |
| (U) Develop AoA studies for standard toolkit (Phase I completed 1QFY99)   | *       |          |          |          |          |          |  | X                |            |
| (U) Integrate models (PI completed 4QFY99)  |         |          |          |          | *        |          |  |                  | X          |



| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |  |                          |                         |                    | DATE                   | February 2000 |
|--|--|--|--------------------------|-------------------------|--------------------|------------------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                      |                          |                         |                    | PROJECT                |               |
| 07 - Operational System Development                |  | 0308601F Modeling and Simulation Support |                          |                         |                    | 671011                 |               |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |  |                          |                         |                    |                        |               |
|  | FY 1999  | FY 2000                                  | FY 2001                  |                         |                    | FY 2001                |               |
| (U)  | Contractor Support   | 290                                      | 0                        | 307                     |                    | 307                    |               |
| (U)  | Program Management Support   | 25                                       | 0                        | 30                      |                    | 30                     |               |
| (U)  | Travel   | 40                                       | 0                        | 49                      |                    | 49                     |               |
| (U)  | Total  | 355                                      | 0                        | 386                     |                    | 386                    |               |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |  |                          |                         |                    |                        |               |
| (U)  | Performing Organizations:  |  |                          |                         |                    |                        |               |
|  | Contract or Government Performing Activity                               | Contract Method/Type or Funding Vehicle  | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 |               |
|  | Product Development Organizations  | Various                                  | Various                  |                         |                    |                        |               |
|  | Support and Management Organizations                                     |  |                          |                         |                    |                        |               |
|  | Test and Evaluation Organizations  |  |                          |                         |                    |                        |               |
|  | Subtotals  |  |                          |                         |                    |                        |               |
|  | Subtotal Product Development   |  |                          |                         |                    |                        |               |
|  | Subtotal Support and Management  |  |                          |                         |                    |                        |               |
|  | Subtotal Test and Evaluation   |  |                          |                         |                    |                        |               |
|  | Total Project  |  |                          |                         |                    |                        |               |
|  |  | Budget FY 1999                           | Budget FY 2000           | Budget FY 2001          | Budget to Complete | Total Program          |               |
|  |  | 355                                      | 0                        | 386                     | TBD                | TBD                    |               |
|  |  |  |                          |                         |                    |                        |               |
|  |  | 355                                      | 0                        | 386                     | TBD                | TBD                    |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |  |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|--|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE                      |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |  | 0308601F Modeling and Simulation Support |                  |                  |                  |                  |                  |                  |                  | 674566     |               |
| COST (\$ in Thousands)   |  | FY 1999 Actual                           | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674566   | Executive Agent for Air/Space Natural Environment            | 683                                      | 0                | 791              | 825              | 915              | 933              | 952              | Continuing       | TBD        |               |
| <p>(U) <b>A. Mission Description</b><br/> Air Force Director of Weather (AF/XOW) is designated as the DoD Modeling and Simulation Executive Agent (MSEA) for Air and Space Natural Environment (ASNE). This program provides funds for MSEA joint wargaming architecture, data base, model development support for Joint Warfare Simulation (JWARS), Joint Simulation System (JSIMS), Joint Modeling and Simulation System (JMASS), and other joint M&amp;S program offices. Primary users will be unified commanders and service components for use in joint exercises involving air, ground, sea, and space campaigns. All FY02-07 RDT&amp;E funding in PE: 38601F will be reprogrammed in the FY02-07 POM cycle to PE: 27601F, titled 'USAF Modeling and Simulation'.</p> |  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)                                    |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$255 Space weather model development                        |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$55 Production center model development                     |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$373 Air/Space weather effects development                  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$683 Total  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)                                    |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0 No Activity  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0 Total  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2001 (\$ in Thousands)                                    |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$128 Space weather prototyping and integration              |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$513 Production center model development                    |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$150 Air/Space/Land battlefield weather effects integration |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$791 Total  |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | <b>B. Project Change Summary</b>                             |  |                  |                  |                  |                  |                  |                  |                  |            |               |
|  | FY00 funding eliminated.                                     |  |                  |                  |                  |                  |                  |                  |                  |            |               |

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Exhibit R-2A (PE 0308601F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   |                     |                     |                     |                     | DATE                | PROJECT                               |                                |
|--|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------------------------|--------------------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE   |                     |                     |                     |                     |                     |                                       |                                |
| <b>07 - Operational System Development</b>             | <b>0308601F Modeling and Simulation Support</b>   |                     |                     |                     |                     |                     | <b>February 2000</b><br><b>674566</b> |                                |
| (U) C. Other Program Funding Summary (\$ in Thousands) | FY 1999<br>Actual   | FY 2000<br>Estimate | FY 2001<br>Estimate | FY 2002<br>Estimate | FY 2003<br>Estimate | FY 2004<br>Estimate | FY 2005<br>Estimate                   | Cost to Complete<br>Total Cost |
| (U) AF RDT&E   |   |                     |                     |                     |                     |                     |                                       |                                |
| (U) Other APPN   |   |                     |                     |                     |                     |                     |                                       |                                |
| (U) D. Acquisition Strategy                            |   |                     |                     |                     |                     |                     |                                       |                                |
|  | The Executive Agent for Air & Space Natural Environment will develop, prototype, and integrate the current suite of production and research grade models for Service and Joint distributed simulation models. The majority of efforts are executed and managed through the DoD laboratory system. |                     |                     |                     |                     |                     |                                       |                                |
| (U) E. Schedule Profile                                |   |                     |                     |                     |                     |                     |                                       |                                |
|  |   |                     |                     |                     |                     |                     |                                       |                                |
| (U) Architecture - ESG IOC (Completed 3QFY99)          | 1   | 2                   | 3                   | 4                   | 1                   | 2                   | 3                                     | 4                              |
| (U) Architecture - ESG FOC                             |   |                     |                     | *                   |                     |                     |                                       | X                              |
| (U) Models - CSSMS FOC                                 |   |                     |                     |                     |                     |                     |                                       | X                              |
| (U) Models - ISM IOC                                   |   |                     |                     |                     |                     |                     |                                       | X                              |

Project 674566
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Exhibit R-2A (PE 0308601F)

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| <b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b> |  |   |                                 |                                |                           | <b>DATE</b> | <b>February 2000</b> |
|---|--|---|---------------------------------|--------------------------------|---------------------------|-------------|----------------------|
| <b>BUDGET ACTIVITY</b>  |  | <b>PE NUMBER AND TITLE</b>                      |                                 |                                | <b>PROJECT</b>            |             |                      |
|   |  | <b>0308601F Modeling and Simulation Support</b> |                                 |                                | <b>674566</b>             |             |                      |
| (U) A.  | <b>Project Cost Breakdown (\$ in Thousands)</b>                              |   |                                 |                                |                           |             |                      |
| (U)   | Software Development   | FY 1999   | FY 2000                         | FY 2001                        | TBD                       |             |                      |
| (U)   | Lab Overhead/Management  | 341   | 0                               | 0                              | 258                       |             |                      |
| (U)   | Prototyping  | 77  | 0                               | 0                              | 80                        |             |                      |
| (U)   | Travel   | 240   | 0                               | 0                              | 428                       |             |                      |
| (U)   | Total  | 25  | 0                               | 0                              | 25                        |             |                      |
| (U)   |  | 683   | 0                               | 0                              | 791                       |             |                      |
| (U) B.  | <b>Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                                 |                                |                           |             |                      |
| (U)   | <b>Performing Organizations:</b>   |   |                                 |                                |                           |             |                      |
|   | <b>Contractor or Government Performing Activity</b>                          | <b>Method/Type or Funding Vehicle</b>           | <b>Award or Obligation Date</b> | <b>Performing Activity EAC</b> | <b>Project Office EAC</b> |             |                      |
|   | Product Development Organizations  | Various   | Various                         | EAC                            | EAC                       |             |                      |
|   | Support and Management Organizations   |   |                                 |                                |                           |             |                      |
|   | Test and Evaluation Organizations  |   |                                 |                                |                           |             |                      |
|   | <b>Subtotals</b>   | <b>Total Prior to FY 1999</b>                   | <b>Budget FY 1999</b>           | <b>Budget FY 2000</b>          | <b>Budget to Complete</b> |             |                      |
|   | Subtotal Product Development   | 683   | 683                             | 0                              | TBD                       |             |                      |
|   | Subtotal Support and Management  |   |                                 |                                |                           |             |                      |
|   | Subtotal Test and Evaluation   |   |                                 |                                |                           |             |                      |
|   | Total Project  | 683   | 683                             | 0                              | TBD                       |             |                      |

Exhibit R-3 (PE 0308601F)  
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 Project 674566

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                             |                                      |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|-----------------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                             | PE NUMBER AND TITLE                  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                             | 0308699F Shared Early Warning System |                  |                  |                  |                  |                  |                  |                  | 674838     |               |
|  |                             | FY 1999 Actual                       | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674838   | COST (\$ in Thousands)      |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
|  | Shared Early Warning System | 0                                    | 11,532           | 4,219            | 4,411            | 3,424            | 2,932            | 2,928            | Continuing       | TBD        |               |
|  | Quantity of RDT&E Articles  | 0                                    | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b></p> <p>Shared Early Warning Systems (SEWS) developed out of Presidential foreign policy initiatives beginning in 1996. Arrangements are negotiated with individual countries on a bilateral basis to provide selected region-specific missile warning data. These efforts were initially handled on an ad hoc basis through the Office of the Secretary of Defense (OSD), the Joint Staff, and the National Reconnaissance Office (NRO). Regional U.S. CINCs and other policy makers strongly support these efforts based on political and operational benefits. In 1998, SEWS was established as a formal DoD program with the Air Force as the lead service. SEWS is comprised of: program management by the system program office (SPO) to include the use of Federally Funded Research &amp; Development Corporation and Systems Engineering and Technical Assistance contractors to develop a common SEWS architecture; coordination, maintenance, and sustainment of the existing systems hardware and software to include any necessary Y2K problem resolution; design, test, and installation of a Joint Warning Center (JWC) in Moscow; development and maintenance of a multi-lingual, web-based infrastructure to address Pre-Launch Notification System issues; and site preparation/installation for additional systems, as required.</p> <p>(U) <b>FY 1999 (\$ in Thousands)</b></p> <p>(U) \$0 Not Applicable</p> <p>(U) \$0 Total</p> <p>(U) <b>FY 2000 (\$ in Thousands)</b></p> <p>(U) \$1,832 Design, Test and Install Joint Warning Center (JWC) in Moscow to include a Pre-Launch Notification System</p> <p>(U) \$9,700 Develop common architecture and begin installation at existing SEWS sites worldwide</p> <p>(U) \$11,532 Total</p> <p>(U) <b>FY 2001 (\$ in Thousands)</b></p> <p>(U) \$1,200 Continue to normalize a common SEWS architecture</p> <p>(U) \$510 Implement Pre-Launch Notification System in additional countries as required</p> <p>(U) \$2,509 Begin common architecture installation at additional SEWS sites as negotiated by SECDEF via OSD</p> <p>(U) \$4,219 Total</p> |                             |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   | DATE                      | February 2000 |
|--|---|---------------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE   | PROJECT                   |               |
| <b>07 - Operational System Development</b>   | <b>0308699F Shared Early Warning System</b>   | <b>674838</b>             |               |
| (U) <b>B. Budget Activity Justification</b>  | This program is in Budget Activity 7 - Operational System Development, because it supports work on currently operating systems and/or upgrades still in engineering development |                           |               |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b>   |   |                           |               |
| (U) Previous President's Budget (FY 2000 PBR)  | FY 1999   | FY 2000                   | FY 2001       |
| (U) Appropriated Value   | 0   | 11,532                    | 4,220         |
| (U) Adjustments to Appropriated Value  | 0   | 11,532                    |               |
| (U) a. Congressional/General Reductions  | 0   |                           |               |
| (U) b. Small Business Innovative Research  | 0   |                           |               |
| (U) c. Omnibus or Other Above Threshold Reprogram  | 0   |                           |               |
| (U) d. Below Threshold Reprogram   | 0   |                           |               |
| (U) e. Rescissions   | 0   |                           |               |
| (U) f. Other   | 0   |                           |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR  | 0   |                           | -1            |
| (U) Current Budget Submit/FY 2001 PBR  | 0   | 11,532                    | 4,219         |
| (U) <b>Significant Program Changes:</b>  |   |                           |               |
| (U) <b>D. Other Program Funding Summary (\$ in Thousands)</b>  |   |                           |               |
|  | FY 1999   | FY 2000                   | FY 2001       |
|  | Actual  | Estimate                  | Estimate      |
| (U) AF RDT&E   | 8,000   |                           |               |
| (U) PE0305906F, NCMC TW/AA   |   |                           |               |
| (U) BA7  |   |                           |               |
| (U) <b>E. Acquisition Strategy</b>   |   |                           |               |
| This program was managed through FY99 under the same ad hoc arrangements as in past years. Beginning in FY00, tasks will be implemented via the Integrated Space Command and Control (ISC2) contract. After final contract award in late-FY00 the ISC2 contract will employ an evolutionary spiral development acquisition strategy that enables rapid development and fielding of an initial capability in response to validated requirements. Implementation within the ISC2 contract will provide significant benefits to SEWS by taking advantage of the commonality between the SEWS and the missile warning mission already included as part of ISC2. This synergy will encourage the use of a common system support infrastructure and reuse of software components. The ISC2 contract will be a performance-oriented |   |                           |               |
| Project 674838   |   | Exhibit R-2 (PE 0308699F) |               |

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                      |   |   |   |   |   |   |   | DATE    | February 2000 |   |   |
|---|--|--------------------------------------|---|---|---|---|---|---|---|---------|---------------|---|---|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                  |   |   |   |   |   |   |   | PROJECT |               |   |   |
| 07 - Operational System Development                 |  | 0308699F Shared Early Warning System |   |   |   |   |   |   |   | 674838  |               |   |   |
| (U)   | <u>E. Acquisition Strategy Continued</u><br>contract vehicle that drives Total System Performance Responsibility to industry.                        |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | <u>E. Schedule Profile</u>   |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | Lead Service Designation   | 1                                    | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1       | 2             | 3 | 4 |
| (U)   | CY2KSS IOC   | *                                    |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | ISC2 Contract Award  |                                      |   |   |   | * |   |   |   |         |               |   |   |
| (U)   | Complete System Architecture Development   |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | Install Pre-Launch Notification System for JWC   |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | JWC Site Operational   |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | Standardization of additional sites with existing architecture   |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | *completed task /X scheduled task.   |                                      |   |   |   |   |   |   |   |         |               |   |   |
| (U)   | - ISC2 initial contract award will be in Feb 00 with two contractors followed by a rolling down select with final award in Aug 00 to one contractor. |                                      |   |   |   |   |   |   |   |         |               |   |   |

Project 674838

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Exhibit R-2 (PE 0308699F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                        |                        |                |                         |                    |
|--|--|---|--------------------------|-------------------------|------------------------|------------------------|----------------|-------------------------|--------------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                     |                          |                         |                        | DATE                   |                | PROJECT                 |                    |
| 07 - Operational System Development                |  | 0308699F Shared Early Warning System    |                          |                         |                        |                        |                | February 2000<br>674838 |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                        |                        |                |                         |                    |
| (U)  | Major Contract   |   |                          |                         |                        | FY 1999                | FY 2000        | FY 2001                 |                    |
| (U)  | Award/Performance Fee  |   |                          |                         |                        | 0                      | 6,687          | 1,987                   |                    |
| (U)  | System Engineering   |   |                          |                         |                        | 0                      | 518            | 435                     |                    |
| (U)  | Program Management Administration (PMA)                                  |   |                          |                         |                        | 0                      | 2,688          | 1,368                   |                    |
| (U)  |  |   |                          |                         |                        | 0                      | 1,639          | 429                     |                    |
| (U)  | Total  |   |                          |                         |                        | 0                      | 11,532         | 4,219                   |                    |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                        |                        |                |                         |                    |
| (U)  | Performing Organizations:  |   |                          |                         |                        |                        |                |                         |                    |
|  | Contract or Government Performing Activity                               | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000          | Budget to Complete |
|  | Product Development Organizations  |   |                          |                         |                        |                        |                |                         |                    |
|  | ISC2 Contractor (TBD)  | CP/AF                                   | Aug 00                   | N/A                     | N/A                    | 0                      | 0              | 2,100                   | Continuing         |
|  | SPAWAR   | MIPR                                    | Nov 99                   |                         |                        |                        |                | 1,384                   | 1,384              |
|  | NRO  | MIPR                                    | Dec 99                   |                         |                        |                        |                | 3,049                   | 3,049              |
|  | Various Ctrs/Gov Agencies  | TBD                                     | TBD                      | N/A                     | N/A                    | 0                      | 0              | 672                     | Continuing         |
|  | Support and Management Organizations                                     |   |                          |                         |                        |                        |                |                         |                    |
|  | FFRDC  | CPFF                                    | N/A                      | N/A                     | N/A                    | 0                      | 0              | 924                     | Continuing         |
|  | A&AS   | C/R                                     | Apr 00                   | N/A                     | N/A                    | 0                      | 0              | 1,764                   | Continuing         |
|  | PMA  | N/A                                     | N/A                      | N/A                     | N/A                    | 0                      | 0              | 1,639                   | Continuing         |
|  | Test and Evaluation Organizations  |   |                          |                         |                        |                        |                |                         |                    |
|  | N/A  |   |                          |                         |                        |                        |                |                         |                    |
| (U)  | Government Furnished Property:   |   |                          |                         |                        |                        |                |                         |                    |
|  | Contract   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget to Complete      | Total Program      |
|  | Item Description   |   |                          |                         |                        |                        |                |                         |                    |

Project 674838

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Exhibit R-3 (PE 0308699F)

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Exhibit R-3 (PE 0308699F)



DATE **February 2000**

| BUDGET ACTIVITY                            | PE NUMBER AND TITLE                         | PROJECT       |
|--|---|---------------|
| <b>07 - Operational System Development</b> | <b>0308699F Shared Early Warning System</b> | <b>674838</b> |

## Contract

## Product Development Property

## Support and Management Property

## Test and Evaluation Property

[illegible]

|                              |   |   |       |       |     |     |
|------------------------------|---|---|-------|-------|-----|-----|
| Subtotal Product Development | 0 | 0 | 7,205 | 2,422 | TBD | TBD |
|------------------------------|---|---|-------|-------|-----|-----|

### Subtotal Test and Evaluation

Project 674838  
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Exhibit R-3 (PE 0308699F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                |                                  |                  |                  |                  |                  |                  |                  |            | DATE | February 2000 |
|---|----------------|----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY   |                | PE NUMBER AND TITLE              |                  |                  |                  |                  |                  |                  |            |      |               |
| 07 - Operational System Development   |                | 0401115F C-130 AIRLIFT SQUADRONS |                  |                  |                  |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)  | FY 1999 Actual | FY 2000 Estimate                 | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost   | 0              | 40,123                           | 60,496           | 112,976          | 130,937          | 105,577          | 87,659           | Continuing       | TBD        |      |               |
| 674726 Avionics Modernization Program (AMP)   | 0              | 40,123                           | 60,496           | 80,252           | 122,314          | 100,129          | 87,659           | Continuing       | TBD        |      |               |
| 674885 Large Aircraft Infrared Counter Measures (LAIRCM)  | 0              | 0                                | 0                | 32,724           | 8,623            | 5,448            | 0                | 0                | 46,795     |      |               |
| Quantity of RDT&E Articles  | 0              | 0                                | 0                | 0                | 1                | 2                | 0                | 0                | 0          |      |               |
| (U) A. Mission Description  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| The C-130 Avionics Modernization Program (AMP) consolidates and installs the mandated DOD Navigation/Safety mods, the Global Air Traffic Management (GATM) systems and the C-130 Broad Area Review requirements. These mandated mods are incorporated with various other Reliability, Maintainability, and Sustainability (RM&S) upgrades. AMP modernization will improve C-130 reliability, and will give the C-130 fleet complete access to international air space. The Large Aircraft Infrared Countermeasures System (LAIRCM) will provide advanced defensive capability against IR Man-Portable Air Defense Systems (MANPADS) for large transport and tanker aircraft. LAIRCM is significantly more effective than today's traditional employment of flares. LAIRCM consists of two advanced integrated missile warning systems and an active laser countermeasures system. |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| (U) B. Budget Activity Justification  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| These programs are a budget activity 7 - Operational System Development because they provide funding for the modernization of a currently existing and operating system.  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| (U) C. Program Change Summary (\$ in Thousands)   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| Previous President's Budget (FY 2000 PBR)   |                |                                  |                  | FY 1999          | FY 2000          | FY 2001          | Total Cost       |                  |            |      |               |
| Appropriated Value  |                |                                  |                  |                  | 0                | 0                | 46,795           |                  |            |      |               |
| Adjustments to Appropriated Value   |                |                                  |                  |                  | 40,600           |                  |                  |                  |            |      |               |
| a. Congressional/General Reductions   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| b. Small Business Innovative Research   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| c. Omnibus or Other Above Threshold Reprogram   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| d. Below Threshold Reprogram  |                |                                  |                  |                  | -220             |                  |                  |                  |            |      |               |
| Page 1 of 10 Pages  |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |
| Exhibit R-2 (PE 0401115F)   |                |                                  |                  |                  |                  |                  |                  |                  |            |      |               |

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|--|--|----------------------|
| <b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b> |  | <b>DATE</b>          |
|  |  | <b>February 2000</b> |

| BUDGET ACTIVITY                     | PE NUMBER AND TITLE              |
|-------------------------------------|----------------------------------|
| 07 - Operational System Development | 0401115F C-130 AIRLIFT SQUADRONS |

## 07 - Operational System Development

(U) Adjustments to Budget Years Since FY 2000 PBR

(U) Current Budget Submit/FY 2001 PBR

Congress approved the AF's request to reprogram FY00's \$38.6 million and FY01's \$61.0 million to RDT&E from the Aircraft Procurement account. Congress also added \$2 million to this program in FY00 for an AC-130 Leading Edge Technology program.

46.795

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |                                      |                                  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|--------------------------------------|----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                                      | PE NUMBER AND TITLE              |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                                      | 0401115F C-130 AIRLIFT SQUADRONS |                  |                  |                  |                  |                  |                  |                  | 674726     |               |
| COST (\$ in Thousands)   |                                      | FY 1999 Actual                   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674726   | Avionics Modernization Program (AMP) | 0                                | 40,123           | 60,496           | 80,252           | 122,314          | 100,129          | 87,659           | Continuing       | TBD        |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The C-130 Avionics Modernization Program (AMP) consolidates and installs the mandated DOD Navigation/Safety mods, the Global Air Traffic Management (GATM) systems and the C-130 Broad Area Review requirements. These mandated mods are incorporated with various other Reliability, Maintainability, and Sustainability (RM&amp;S) upgrades to include: TCAS, TAWS, replace APN-59 and APQ-175 radars, replace N-1/C-12 compass, provide dual autopilots, install dual flight management systems and provide HF/UHF/VHF datalink. AMP modernization will give the C-130 fleet complete access to international air space.</p> <p>The USAF C-130 fleet consists of 15 different mission design series (MDS) to be modified by the Avionics Modernization Program (AMP). Some of these MDSs have multiple variants within each which result in a total of 20 C-130 variants to be modified by AMP. These multiple different models and cockpit configurations result in significant support and training inefficiencies. Also, these differences greatly complicate unit/aircraft interoperability at forward locations. The AMP program standardizes the cockpit configurations and avionics for these 20 different variants by installing a single core avionics package and cockpit configuration, thus eliminating the fleet's significant interoperability and training problems. (Note: the C-130J MDSs are not affected by AMP). Today, the maintainability and supportability costs for these 20 different variants are increasing at a rate greater than inflation. AMP will modernize these aircraft with new avionics suites and other cockpit equipment to bring costs down and improve aircrew interoperability.</p> <p>The baseline program (described here) modifies the first seven variants of the C-130 fleet for a total of 397 aircraft. The planned FY02 POM follow-on program will fund and complete AMP for the remaining 122 aircraft (13 variants in eight different C-130 MDSs). Each variant or group of variants will require a specific kit development and test, then will proceed through development and production serially. During FY02-FY06, these first seven variants will be in some stage of development. Some will be in the design phase, while others will be in trial installation, testing, kit proof, or production phases. This waterfall approach will result in an orderly sequencing of development and production for the many different kits required for the C-130 fleet. The early kits will be the 'core' kits upon which kits for the more complicated aircraft will be developed. Lessons learned from the early variants will be applied to subsequent variants to reduce program risk and cost. In addition, an AF fleet-wide training system will be developed.</p> <p>Note: The C-130 Avionics Modernization Program (AMP) was initially a consolidation of a number of ongoing and planned mods which was funded in FY99 and throughout the FYDP with 3010 appropriations. In the summer of 99, the scope of the AMP program changed and became more complex, thus requiring RDT&amp;E funding. The FY 99 Omnibus requested a \$1.654 million RDT&amp;E reprogramming to begin AMP. The Omnibus was approved, but the FY 00 Appropriations Act rescinded the FY 98 and FY 99 funds (\$1.8M and \$2.7M respectively). However, Congress did approve the AF's request to reprogram FY00's \$38.6 million to RDT&amp;E from the procurement account. Congress also added \$2M to this program for an AC-130 Leading Edge Technology program.</p> |                                      |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |

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Exhibit R-2A (PE 0401115F)

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| BUDGET ACTIVITY                            |   | RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |          | DATE                       | February 2000 |          |          |          |            |            |
|--|---|---|----------|----------------------------|---------------|----------|----------|----------|------------|------------|
| PROJECT                                    |   | PE NUMBER AND TITLE   |          | PROJECT                    |               |          |          |          |            |            |
| <b>07 - Operational System Development</b> |   | <b>0401115F C-130 AIRLIFT SQUADRONS</b>   |          | <b>674726</b>              |               |          |          |          |            |            |
| (U)  | <b>A. Mission Description Continued</b>   |   |          |                            |               |          |          |          |            |            |
| (U)  | <b>FY 1999 (\$ in Thousands)</b>  |   |          |                            |               |          |          |          |            |            |
| (U)  | \$0   | No activity   |          |                            |               |          |          |          |            |            |
| (U)  | \$0   | Total   |          |                            |               |          |          |          |            |            |
| (U)  | <b>FY 2000 (\$ in Thousands)</b>  |   |          |                            |               |          |          |          |            |            |
| (U)  | \$32,000  | Begins design and software development for AMP. This includes beginning detailed group A & B design series, hardware/software development of crew station modules/computer simulation, initiate design of system integration lab (SIL), development of training system, and continue CAAP Risk Mitigation flight testing.               |          |                            |               |          |          |          |            |            |
| (U)  | \$6,123   | Program office support (A&AS, SPO, TDY, training and supplies).   |          |                            |               |          |          |          |            |            |
| (U)  | \$2,000   | AC-130 Leading Edge Technology program (Congressional insertion)  |          |                            |               |          |          |          |            |            |
| (U)  | \$40,123  | Total   |          |                            |               |          |          |          |            |            |
| (U)  | <b>FY 2001 (\$ in Thousands)</b>  |   |          |                            |               |          |          |          |            |            |
| (U)  | \$52,996  | Award EMD contract. Continue design and software development. This includes beginning detailed group A & B design series, hardware/software development of crew station modules/computer simulation, initiate design of system integration lab (SIL), development of training system, and continue CAAP Risk Mitigation flight testing. |          |                            |               |          |          |          |            |            |
| (U)  | \$7,500   | Program office support (A&AS, SPO, TDY, training and supplies).   |          |                            |               |          |          |          |            |            |
| (U)  | \$60,496  | Total   |          |                            |               |          |          |          |            |            |
| (U)  | <b>B. Project Change Summary</b>  |   |          |                            |               |          |          |          |            |            |
| (U)  | This program is budget activity 7, Operational System Development, to support full-rate production and improve the operational capability of the C-130 fleet through operational modifications. |   |          |                            |               |          |          |          |            |            |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |   |          |                            |               |          |          |          |            |            |
|  |   | FY 1999   | FY 2000  | FY 2001                    | FY 2002       | FY 2003  | FY 2004  | FY 2005  | Cost to    | Total Cost |
|  |   | Actual  | Estimate | Estimate                   | Estimate      | Estimate | Estimate | Estimate | Complete   |            |
| (U)  | AF RDT&E  | 0   | 0        | 2,000                      | 0             | 0        | 0        | 0        | 0          | 2,000      |
| (U)  | Other APPN  |   |          |                            |               |          |          |          |            |            |
| (U)  | PE 41115F, AMP, BP1100  |   |          |                            |               | 36,000   | 80,800   | 187,600  | Continuing | Continuing |
| (U)  | <b>D. Acquisition Strategy</b>  |   |          |                            |               |          |          |          |            |            |
| (U)  | The EMD contract will be a competitively-awarded Cost Plus Award Fee to develop AMP kits for the first seven variants within the AF C-130 fleet.  |   |          |                            |               |          |          |          |            |            |
| Project 674726                             |   | Page 4 of 10 Pages  |          | Exhibit R-2A (PE 0401115F) |               |          |          |          |            |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |                                   | DATE                             | February 2000 |         |
|--|-----------------------------------|----------------------------------|---------------|---------|
| BUDGET ACTIVITY                                      |                                   | PE NUMBER AND TITLE              |               | PROJECT |
| 07 - Operational System Development                  |                                   | 0401115F C-130 AIRLIFT SQUADRONS |               | 674726  |
| (U)  | <u>E. Schedule Profile</u>        |                                  |               |         |
|  |                                   | FY 1999                          | FY 2000       | FY 2001 |
|  |                                   | 1 2 3 4                          | 1 2 3 4       | 1 2 3 4 |
| (U)  | C-130 AMP Contract Award          |                                  |               |         |
| (U)  | C-130 Systems Requirements Review |                                  |               | X       |
| (U)  | C-130 Preliminary Design Review   |                                  |               | X       |
| (U)  | C-130 CAAP PDR                    |                                  |               | X       |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         | DATE               | February 2000      |
|--|--|---|--------------------------|-------------------------|--------------------|--------------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                     |                          |                         | PROJECT            |                    |
| 07 - Operational System Development                |  | 0401115F C-130 AIRLIFT SQUADRONS        |                          |                         | 674726             |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                    | FY 2001            |
| (U)  | C-130 AMP EMD  |   |                          |                         | FY 1999            | 52,996             |
| (U)  | Program Office Support   |   |                          |                         | 0                  | 7,500              |
| (U)  | AC-130 Leading Edge funding  |   |                          |                         | 0                  | 0                  |
| (U)  | Total  |   |                          |                         | 0                  | 60,496             |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                    |                    |
| (U)  | Performing Organizations:  |   |                          |                         |                    |                    |
|  | Contract or Government Performing Activity                               | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Program      |
|  | Product Development Organizations  |   |                          |                         |                    |                    |
|  | Prime Contractor   | CPAF                                    | FY01/01                  |                         | 0                  | TBD                |
|  | Prime Contractor (AC-130)  | CPAF                                    | FY01/01                  |                         | 0                  | 2,000              |
|  | Support and Management Organizations                                     |   |                          |                         |                    |                    |
|  | Program Support Office   |   |                          |                         | 0                  | TBD                |
|  | Test and Evaluation Organizations  |   |                          |                         |                    |                    |
|  | TBD  |   |                          |                         | 0                  | TBD                |
| (U)  | Government Furnished Property:   |   |                          |                         |                    |                    |
|  | Contract Method/Type or Funding Vehicle                                  | Award or Obligation Date                | Delivery Date            | Total Prior to FY 1999  | Budget FY 1999     | Budget to Complete |
|  | Item Description   |   |                          |                         |                    |                    |
|  | Product Development Property   |   |                          |                         |                    |                    |
|  | N/A  |   |                          | 0                       | 0                  | TBD                |
|  | Support and Management Property  |   |                          |                         |                    |                    |
|  | N/A  |   |                          | 0                       | 0                  | TBD                |

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Exhibit R-3 (PE 0401115F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                  | DATE        | February 2000 |         | PROJECT |            |
|--|----------------------------------|-------------|---------------|---------|---------|------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE              |             |               | 674726  |         |            |
| 07 - Operational System Development                | 0401115F C-130 AIRLIFT SQUADRONS |             |               |         |         |            |
| (U) Government Furnished Property Continued:       |                                  |             |               |         |         |            |
| Test and Evaluation Property                       |                                  |             |               |         |         |            |
| TBD  |                                  | 0           | 0             | 0       | 0       | Continuing |
|  |                                  | Total Prior | Budget        | Budget  | Budget  | Total      |
|  |                                  | to FY 1999  | FY 1999       | FY 2000 | FY 2001 | Program    |
| Subtotals  |                                  | 0           | 0             | 34,000  | 52,996  | TBD        |
| Subtotal Product Development                       |                                  | 0           | 0             | 6,123   | 7,500   | TBD        |
| Subtotal Support and Management                    |                                  | 0           | 0             | 0       | 0       | TBD        |
| Subtotal Test and Evaluation                       |                                  | 0           | 0             | 40,123  | 60,496  | TBD        |
| Total Project                                      |                                  | 0           | 0             |         |         | TBD        |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   |                                  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---|----------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE              |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |   | 0401115F C-130 AIRLIFT SQUADRONS |                  |                  |                  |                  |                  |                  |                  | 674885     |               |
| COST (\$ in Thousands)   |   | FY 1999 Actual                   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674885   | Large Aircraft Infrared Counter Measures (LAIRCM) | 0                                | 0                | 0                | 32,724           | 8,623            | 5,448            | 0                | 0                | 46,795     |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The Large Aircraft Infrared Countermeasures System (LAIRCM) will provide advanced defensive capability against IR Man-Portable Air Defense Systems (MANPADS) for large transport and tanker aircraft. LAIRCM is significantly more effective than today's traditional employment of flares. It will require no operator intervention after the system is activated. LAIRCM consists of two advanced integrated missile warning systems and an active laser countermeasures system. There is a multi-service Operational Requirements Document (ORD) -- LAIRCM ORD 314-92, validated on 3 Aug 98.</p> <p>LAIRCM will first be deployed on a small number of C-17 and C-130 aircraft. KC-135s are the next aircraft in the planned follow-on group. FY01 is the first year for C-17 LAIRCM funding. FY02 is the first year for C-130 funding. LAIRCM is divided into two phases. The first phase equips 20 aircraft (12 C-17s and 8 C-130s). Phase II will modify an additional 59 aircraft. Funding and kit procurement for Phase II is planned to begin in FY05.</p> <p>Installation of this system will increase the survivability of strategic aircraft when operating in areas with IR MANPADS threats. The C-17 will be first to receive LAIRCM, the first C-17 mod will be completed in FY03. Since this system will integrate existing subsystems, initial deployment should be achieved by FY03. RDT&amp;E funds will be used for non-recurring engineering (NRE) and integration test and evaluation.</p> <p>This is an FY01 NEW START program with notification made simultaneously here and in the C-17's descriptive summary.</p> |   |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)                         |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | No activity                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | Total                            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)                         |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | No activity                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | Total                            |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2001 (\$ in Thousands)                         |                                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | No activity                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0   | Total                            |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |                                  |          |          |          |          |          |          |          | DATE       | February 2000 | PROJECT |
|--|---|----------------------------------|----------|----------|----------|----------|----------|----------|----------|------------|---------------|---------|
| BUDGET ACTIVITY                                      |   | PE NUMBER AND TITLE              |          |          |          |          |          |          |          | PROJECT    |               |         |
| 07 - Operational System Development                  |   | 0401115F C-130 AIRLIFT SQUADRONS |          |          |          |          |          |          |          | 674885     |               |         |
| (U)  | <b>B. Project Change Summary</b>  |                                  |          |          |          |          |          |          |          |            |               |         |
|  | This program is budget activity 7, Operational System Development, for continuing producibility and performance improvements to support full-rate production and increase the operational capability of the C-130 fleet through programmed modifications. |                                  |          |          |          |          |          |          |          |            |               |         |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |                                  |          |          |          |          |          |          |          |            |               |         |
|  |   | FY 1999                          | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to  | Total Cost |               |         |
|  |   | Actual                           | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete |            |               |         |
| (U)  | AF RDT&E  | 0                                | 0        | 45,298   | 29,451   | 11,497   | 7,824    | 0        | 0        | 94,070     |               |         |
| (U)  | PE 41130F, C-17 RDT&E   |                                  |          |          |          |          |          |          |          |            |               |         |
| (U)  | Other APPN  |                                  |          |          |          |          |          |          |          |            |               |         |
| (U)  | PE 41130F, C-17   | 0                                | 0        | 0        | 33,100   | 51,200   | 48,600   | 6,200    | 7,000    | 146,100    |               |         |
|  | Procurement (BP1100)  |                                  |          |          |          |          |          |          |          |            |               |         |
| (U)  | PE 41115F, C-130  | 0                                | 0        | 0        | 0        | 33,400   | 48,900   | 6,000    | 7,000    | 95,300     |               |         |
|  | Procurement (BP1100)  |                                  |          |          |          |          |          |          |          |            |               |         |
| (U)  | <b>D. Acquisition Strategy</b>  |                                  |          |          |          |          |          |          |          |            |               |         |
|  | The C-130 LAIRCM acquisition strategy is yet to be determined. It is anticipated that it will be a competitive bid process  |                                  |          |          |          |          |          |          |          |            |               |         |
| (U)  | <b>E. Schedule Profile</b>  |                                  |          |          |          |          |          |          |          |            |               |         |
|  |   | FY 1999                          |          | FY 2000  |          | FY 2001  |          |          |          |            |               |         |
|  |   | 1                                | 2        | 3        | 4        | 1        | 2        | 3        | 4        | 1          | 2             | 3       |
| (U)  | Phase I EMD: 2 Qtr FY02   |                                  |          |          |          |          |          |          |          |            |               | 4       |

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Exhibit R-2A (PE 0401115F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                        |                        |                |                |                    | DATE                             | February 2000 |         |         |
|--|--|---|--------------------------|-------------------------|------------------------|------------------------|----------------|----------------|--------------------|----------------------------------|---------------|---------|---------|
| BUDGET ACTIVITY                                    |  |   |                          |                         |                        |                        |                |                |                    | PE NUMBER AND TITLE              | PROJECT       |         |         |
| 07 - Operational System Development                |  |   |                          |                         |                        |                        |                |                |                    | 0401115F C-130 AIRLIFT SQUADRONS | 674885        |         |         |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                        |                        |                |                |                    |                                  | FY 1999       | FY 2000 | FY 2001 |
| (U)  | Total  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
| (U)  | Performing Organizations:  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001     | Budget to Complete               | Total Program |         |         |
|  | Product Development Organizations  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Support and Management Organizations                                     |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Test and Evaluation Organizations  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
| (U)  | Government Furnished Property:   |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Item Description   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program                    |               |         |         |
|  | Product Development Property   |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Support and Management Property  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Test and Evaluation Property   |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Subtotals  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Subtotal Product Development   |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Subtotal Support and Management  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Subtotal Test and Evaluation   |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |
|  | Total Project  |   |                          |                         |                        |                        |                |                |                    |                                  |               |         |         |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                |                                |                  |                  |                  |                  |                  |                  |            | DATE | February 2000 |
|---|----------------|--------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|------|---------------|
| BUDGET ACTIVITY   |                | PE NUMBER AND TITLE            |                  |                  |                  |                  |                  |                  |            |      |               |
| 07 - Operational System Development   |                | 0401119F C-5 Airlift Squadrons |                  |                  |                  |                  |                  |                  |            |      |               |
| COST (\$ in Thousands)  | FY 1999 Actual | FY 2000 Estimate               | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |      |               |
| Total Program Element (PE) Cost   | 37,348         | 59,122                         | 92,530           | 135,619          | 101,942          | 18,817           | 0                | 0                | 448,565    |      |               |
| 674495 Avionics Modernization Program   | 37,348         | 40,356                         | 44,901           | 46,508           | 235              | 0                | 0                | 0                | 172,535    |      |               |
| 674835 Reliability Enhancement & Reengining Program   | 0              | 18,766                         | 47,629           | 89,111           | 101,707          | 18,817           | 0                | 0                | 276,030    |      |               |
| Quantity of RDT&E Articles  | 2              | 0                              | 0                | 2                | 0                | 0                | 0                | 0                | 4          |      |               |
| <b>(U) A. Mission Description</b>   |                |                                |                  |                  |                  |                  |                  |                  |            |      |               |
| 674495: Avionics Modernization Program (AMP): Phase I of an Air Force planned two-phase modernization effort of the C-5. Formerly called the C-5 All-Weather Flight Control System (AWFCS) Reliability Improvement Program, the C-5 Avionics Modernization Program redesigns the avionics system architecture to support the AWFCS Reliability Improvement Program and Global Air Traffic Management (GATM) requirements. AMP also installs Secretary of Defense (SECDEF) directed Navigation Safety equipment: Terrain Awareness and Warning System (TAWWS) [formerly Enhanced Ground Proximity Warning System (EGPWS)] and Traffic Alert and Collision Avoidance System (TCAS). The AWFCS portion of AMP replaces low reliability Line Replaceable Units (LRUs) in the automatic flight control system and replaces aging mechanical instruments in the engine and flight systems. Many control systems will be unsupportable within five years. A GATM capability, which encompasses communications, navigation, and surveillance requirements, will be concurrently incorporated into the aircraft to meet current and future International Civil Aviation Organization (ICAO)/Federal Aviation Administration (FAA) requirements and to progress towards 'free flight' capability. Connectivity to Mobility command and control capabilities will also be incorporated in the AMP design. The integration of TCAS and TAWS Nav Safety enhancements in AMP satisfies great congressional interest to reduce the threat of mid-air collisions and controlled flight into terrain. The TCAS portion is accelerated to complete ahead of the rest of the AMP mod (by FY02). Two AMP RDT&E test articles are funded in FY99 for flight test and installed in 1Q FY02. |                |                                |                  |                  |                  |                  |                  |                  |            |      |               |
| 674835: Reliability Enhancement and Reengining Program (RERP): Phase II comprehensive modernization of the C-5 improves aircraft reliability, maintainability and availability. The goal of RERP is to achieve C-5 wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability) while reducing total ownership costs (TOC). This effort centers around replacing TF-39 engines with a more reliable, commercially available (COTS) turbofan engine with increased takeoff thrust and stage three noise compliance. These new engines (along with new pylons, wing attach fittings and upgrades, and thrust reversers) increase payload capability, improve transportation system throughput and decrease engine removals. Numerous other system/reliability 'Bad Actors' will be addressed (e.g. auxiliary power units, electrics, hydraulics, landing gear, fuel system, airframe, fire suppression system, and pressurization/air conditioning system). Two RDT&E test articles are funded in FY02 for flight test and installed in FY04.  |                |                                |                  |                  |                  |                  |                  |                  |            |      |               |

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Exhibit R-2 (PE 0401119F)

Exhibit R-2 (PE 0401119F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                                | DATE    | February 2000 |
|---|--|--------------------------------|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE            |         |               |
| 07 - Operational System Development                 |  | 0401119F C-5 Airlift Squadrons |         |               |
| (U)   | <u>B. Budget Activity Justification</u><br>674495: Avionics Modernization Program (AMP): This project is comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development.  |                                |         |               |
|   | 674835: Reliability Enhancement and Reengining Program (RERP): This project is comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development.  |                                |         |               |
| (U)   | <u>C. Program Change Summary (\$ in Thousands)</u>   |                                |         |               |
| (U)   | Previous President's Budget (FY 2000 PBR)  | FY 1999                        | FY 2000 | FY 2001       |
| (U)   | Appropriated Value   | 33,594                         | 63,041  | 56,416        |
| (U)   | Adjustments to Appropriated Value  | 33,736                         | 60,041  |               |
|   | a. Congressional/General Reductions  | -142                           | -3      |               |
|   | b. Small Business Innovative Research  | -1,066                         | 0       |               |
|   | c. Omnibus or Other Above Threshold Reprogram  | 3,545                          | -325    |               |
|   | d. Below Threshold Reprogram   | 1,484                          | 0       |               |
|   | e. Rescissions   | -209                           | -591    |               |
|   | f. Other   | 0                              | 0       |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  | 0                              | 0       | 36,114        |
| (U)   | Current Budget Submit/FY 2001 PBR  | 37,348                         | 59,122  | 92,530        |
| (U)   | <u>Significant Program Changes:</u><br>Since FY00 PB:<br>- C-5 AMP contract awarded 22 Jan 1999. Cost delta between the negotiated contract price and the AMP procurement funds budgeted in FY01, FY02 and FY03 of the FY00 PB were realigned to RDT&E for AMP and RERP. Other cost differences in AMP procurement funds in the outyears were moved to RERP procurement.<br>- RERP RDT&E funds in FY04 and FY05 of the FY00 PB were realigned to RERP procurement. |                                |         |               |
|   |  |                                |         | -15,434       |
|   |  |                                |         | 448,565       |

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Exhibit R-2 (PE 0401119F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |   |                                |                  |                  |                  |                  |                  |                  | DATE             | February 2000 |
|--|---|---|--------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------|
| BUDGET ACTIVITY                                      |   |   | PE NUMBER AND TITLE            |                  |                  |                  |                  |                  | PROJECT          |                  |               |
| 07 - Operational System Development                  |   |   | 0401119F C-5 Airlift Squadrons |                  |                  |                  |                  |                  | 674495           |                  |               |
| COST (\$ in Thousands)                               |   |   | FY 1999 Actual                 | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost    |
| 674495   | Avionics Modernization Program  |   | 37,348                         | 40,356           | 44,901           | 46,508           | 235              | 0                | 0                | 0                | 172,535       |
| (U)  | <b>A. Mission Description</b><br>674495: Avionics Modernization Program (AMP): Phase I of an Air Force planned two-phase modernization effort of the C-5. Formerly called the C-5 All-Weather Flight Control System (AWFCS) Reliability Improvement Program, the C-5 Avionics Modernization Program redesigns the avionics system architecture to support the AWFCS Reliability Improvement Program and Global Air Traffic Management (GATM) requirements. AMP also installs Secretary of Defense (SECDEF) directed Navigation Safety equipment: Terrain Awareness and Warning System (TAWS) [formerly Enhanced Ground Proximity Warning System (EGPWS)] and Traffic Alert and Collision Avoidance System (TCAS). The AWFCS portion of AMP replaces low reliability Line Replaceable Units (LRUs) in the automatic flight control system and replaces aging mechanical instruments in the engine and flight systems. Many control systems will be unsupportable within five years. A GATM capability, which encompasses communications, navigation, and surveillance requirements, will be concurrently incorporated into the aircraft to meet current and future International Civil Aviation Organization (ICAO)/Federal Aviation Administration (FAA) requirements and to progress towards 'free flight' capability. Connectivity to Mobility command and control capabilities will also be incorporated in the AMP design. The integration of TCAS and TAWS Nav Safety enhancements in AMP satisfies great congressional interest to reduce the threat of mid-air collisions and controlled flight into terrain. The TCAS portion is accelerated to complete ahead of the rest of the AMP mod (by FY02). Two AMP RDT&E test articles are funded in FY99 for flight test and installed in 1Q FY02. |   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | <b>FY 1999 (\$ in Thousands)</b>  |   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$10,241  | System Engineering / Program Management |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$22,804  | AMP Kit Design / Development            |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$2,512   | Prototype Fabrication / Install         |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$1,791   | Mission Support                         |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$37,348  | Total                                   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | <b>FY 2000 (\$ in Thousands)</b>  |   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$8,300   | System Engineering / Program Management |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$24,672  | AMP Kit Design / Development            |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$5,200   | Prototype Fabrication / Install         |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$2,184   | Mission Support                         |                                |                  |                  |                  |                  |                  |                  |                  |               |
| (U)  | \$40,356  | Total                                   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| Project 674495                                       |   |   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| Page 3 of 12 Pages                                   |   |   |                                |                  |                  |                  |                  |                  |                  |                  |               |
| Exhibit R-2A (PE 0401119F)                           |   |   |                                |                  |                  |                  |                  |                  |                  |                  |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                                       | DATE               | February 2000              |
|---|---------------------------------------|--------------------|----------------------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                   | PROJECT            |                            |
| <b>07 - Operational System Development</b>  | <b>0401119F C-5 Airlift Squadrons</b> | <b>674495</b>      |                            |
| (U) <b>A. Mission Description Continued</b>   |                                       |                    |                            |
| (U) FY 2001 (\$ in Thousands)   |                                       |                    |                            |
| (U) \$8,200 System Engineering / Program Management   |                                       |                    |                            |
| (U) \$24,100 AMP Kit Design / Development   |                                       |                    |                            |
| (U) \$10,200 Prototype Fabrication / Install  |                                       |                    |                            |
| (U) \$2,401 Mission Support   |                                       |                    |                            |
| (U) \$44,901 Total  |                                       |                    |                            |
| (U) <b>B. Project Change Summary</b>  |                                       |                    |                            |
| Since FY00 PB:  |                                       |                    |                            |
| - C-5 AMP contract awarded 22 Jan 1999. Cost delta between the negotiated contract price and the AMP procurement funds budgeted in FY01, FY02 and FY03 of the FY00 PB were realigned to RDT&E for AMP and RERP. Other cost differences in AMP procurement funds in the outyears were moved to RERP procurement. |                                       |                    |                            |
| (U) <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |                                       |                    |                            |
|   | FY 1999 Actual                        | FY 2000 Estimate   | FY 2001 Estimate           |
| (U) AF RDT&E  |                                       |                    |                            |
| (U) Other APPN  |                                       |                    |                            |
| (U) PE# 0401119F/C-5 Airlift Squadrons  | 10,327                                | 27,676             | 59,578                     |
| (U) Aircraft Procurement, AF, BA-5, C-5 Mods, Avionics Modernization Program, BP-11   |                                       |                    |                            |
| (U) PE# 0401119F/C-5 Airlift Squadrons  | 0                                     | 0                  | 0                          |
| (U) Aircraft Procurement, AF, BA-5, C-5 Mods, Reliability Enhancement and Reengineering Program, BP-11  |                                       |                    |                            |
| (U) PE# 0305099F/Global Air   |                                       |                    |                            |
| Project 674495  |                                       | Page 4 of 12 Pages | Exhibit R-2A (PE 0401119F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |  |                  |                  |                  |                            |                  |                  |                  |            |
|---|--|------------------|------------------|------------------|----------------------------|------------------|------------------|------------------|------------|
| BUDGET ACTIVITY   |  |                  |                  |                  | DATE                       |                  | PROJECT          |                  |            |
| 07 - Operational System Development   |  |                  |                  |                  | February 2000              |                  | 674495           |                  |            |
| PE NUMBER AND TITLE   |  |                  |                  |                  |                            |                  |                  |                  |            |
| 0401119F C-5 Airlift Squadrons  |  |                  |                  |                  |                            |                  |                  |                  |            |
| C. Other Program Funding Summary (\$ in Thousands)  |  |                  |                  |                  |                            |                  |                  |                  |            |
|   | FY 1999 Actual                             | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate           | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
| (U)   | Traffic Management (GATM)                  |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | RDT&E, AF, BA-7                            | 24,882           | 6,402            | 8,508            | 9,496                      | 7,567            | 7,720            | 7,872            | TBD        |
| D. Acquisition Strategy   |  |                  |                  |                  |                            |                  |                  |                  |            |
| Avionics Modernization Program: Program acquisition strategy establishes a single integrating contractor (Lockheed-Martin) to modify and qualify integrated Commercial Off-the-Shelf (COTS) line replaceable units (LRU) and software to meet C-5 performance and Global Air Traffic Management (GATM) requirements, update existing C-5 engineering and technical data, develop interface control specifications based on performance requirements, prototype the new system, and support ground and flight testing. AMP contract awarded to the Lockheed-Martin/Honeywell team on 22 January 1999. \$9.7M in FY99 procurement was added in the FY00 PB to accelerate Traffic Alert and Collision Avoidance System (TCAS) installations ahead of the rest of AMP. TCAS installs scheduled to complete in FY02. |  |                  |                  |                  |                            |                  |                  |                  |            |
| E. Schedule Profile   |  |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | Acquisition Strategy Panel (FY97/4)        |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | Contract Award                             |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | Preliminary Design Review (PDR)            |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | Critical Design Review (CDR)               |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | TCAS Kit Installations Start               |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | TCAS Kit Installations End (FY02/4)        |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | AMP Prototype Installation Start           |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | First Flight (FY02/1)                      |                  |                  |                  |                            |                  |                  |                  | X          |
| (U)   | Developmental Test Start (FY02/1 - FY02/4) |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | Production Installation Start (FY02/4)     |                  |                  |                  |                            |                  |                  |                  |            |
| (U)   | Prod Installation Complete (FY06/1)        |                  |                  |                  |                            |                  |                  |                  |            |
| * = completed event   |  |                  |                  |                  |                            |                  |                  |                  |            |
| X = planned event   |  |                  |                  |                  |                            |                  |                  |                  |            |
| Project 674495  |  |                  |                  |                  | Page 5 of 12 Pages         |                  |                  |                  |            |
|   |  |                  |                  |                  | Exhibit R-2A (PE 0401119F) |                  |                  |                  |            |

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Exhibit R-2A (PE 0401119F)

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## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 07 - Operational System Development

0401119F C-5 Airlift Squadrons

674495

## (U) A. Project Cost Breakdown (\$ in Thousands)

|   | FY 1999 | FY 2000 | FY 2001 |
|---|---------|---------|---------|
| (U) System Engineering / Program Management | 10,241  | 8,300   | 8,200   |
| (U) AMP Kit Design / Development            | 22,804  | 24,672  | 24,100  |
| (U) Prototype Fabrication / Install         | 2,512   | 5,200   | 10,200  |
| (U) Mission Support                         | 1,791   | 2,184   | 2,401   |
| (U) Total                                   | 37,348  | 40,356  | 44,901  |

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## (U) Performing Organizations:

| Contractor or Government Performing Activity | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|--|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
|  |   |                          |                         |                    |                        |                |                |                |                    |               |
| Product Development Organizations            |   |                          |                         |                    |                        |                |                |                |                    |               |
| WR-ALC/LA                                    |   |                          |                         | 5,970              | 1,170                  | 1,200          | 1,200          | 1,200          | 1,200              | 5,970         |
| ASC/GRA                                      | C/CPAF                                  | Jan 99                   |                         | 159,954            | 2,017                  | 36,067         | 39,156         | 43,304         | 39,643             | 160,187       |
| Support and Management Organizations         |   |                          |                         |                    |                        |                |                |                |                    |               |
| Test and Evaluation Organizations            |   |                          |                         |                    |                        |                |                |                |                    |               |
| 418 Test Squadron (Edwards AFB)              |   |                          |                         |                    |                        | 81             |                | 397            | 5,900              | 6,378         |

## (U) Government Furnished Property:

| Item Description                | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Delivery Date | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|---------------------------------|---|--------------------------|---------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
|                                 |   |                          |               |                        |                |                |                |                    |               |
| Product Development Property    |   |                          |               |                        |                |                |                |                    |               |
| N/A                             |   |                          |               |                        |                |                |                |                    |               |
| Support and Management Property |   |                          |               |                        |                |                |                |                    |               |
| N/A                             |   |                          |               |                        |                |                |                |                    |               |

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Exhibit R-3 (PE 0401119F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                                |                | DATE           | February 2000      |               |
|--|--|--------------------------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE            |                | PROJECT        |                    |               |
| 07 - Operational System Development                |  | 0401119F C-5 Airlift Squadrons |                | 674495         |                    |               |
| (U)  | Government Furnished Property Continued: |                                |                |                |                    |               |
|  | Test and Evaluation Property             |                                |                |                |                    |               |
|  | N/A                                      |                                |                |                |                    |               |
|  | Subtotals                                | Total Prior to FY 1999         | Budget FY 1999 | Budget FY 2000 | Budget to Complete | Total Program |
|  | Subtotal Product Development             | 3,187                          | 37,267         | 40,356         | 44,504             | 166,157       |
|  | Subtotal Support and Management          |                                | 81             |                | 397                | 6,378         |
|  | Subtotal Test and Evaluation             | 3,187                          | 37,348         | 40,356         | 44,901             | 172,535       |
|  | Total Project                            |                                |                |                |                    |               |

Project 674495

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Exhibit R-3 (PE 0401119F)

Project 674495

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Exhibit R-3 (PE 0401119F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |   | PE NUMBER AND TITLE                     |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |   | 0401119F C-5 Airlift Squadrons          |                  |                  |                  |                  |                  |                  |                  | 674835     |               |
| COST (\$ in Thousands)  |   | FY 1999 Actual                          | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674835  | Reliability Enhancement & Reengineering Program | 0                                       | 18,766           | 47,629           | 89,111           | 101,707          | 18,817           | 0                | 0                | 276,030    |               |
| <p>(U) <b>A. Mission Description</b></p> <p>674835: Reliability Enhancement and Reengineering Program (RERP): Phase II comprehensive modernization of the C-5 improves aircraft reliability, maintainability and availability. The goal of RERP is to achieve C-5 wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability) while reducing total ownership costs (TOC). This effort centers around replacing TF-39 engines with a more reliable, commercially available (COTS) turbofan engine with increased takeoff thrust and stage three noise compliance. These new engines (along with new pylons, wing attach fittings and upgrades, and thrust reversers) increase payload capability, improve transportation system throughput and decrease engine removals. Numerous other system/reliability 'Bad Actors' will be addressed (e.g. auxiliary power units, electrics, hydraulics, landing gear, fuel system, airframe, fire suppression system, and pressurization/air conditioning system). Two RDT&amp;E test articles are funded in FY02 for flight test and installed in FY04.</p> |   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands)                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0   | No Activity                             |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0   | Total                                   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands)                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$7,000   | System Engineering / Program Management |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$10,400  | RERP Kit Design / Development           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,366   | Mission Support                         |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$18,766  | Total                                   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2001 (\$ in Thousands)                       |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$13,380  | System Engineering / Program Management |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$23,583  | RERP Kit Design / Development           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$7,670   | Prototype Fabrication / Install         |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$2,996   | Mission Support                         |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$47,629  | Total                                   |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   | DATE                           |                 | February 2000      |                 |                            |                 |                 |                 |                   |
|--|---|--------------------------------|-----------------|--------------------|-----------------|----------------------------|-----------------|-----------------|-----------------|-------------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE            |                 | PROJECT            |                 |                            |                 |                 |                 |                   |
| 07 - Operational System Development  |   | 0401119F C-5 Airlift Squadrons |                 | 674835             |                 |                            |                 |                 |                 |                   |
| (U) <u>B. Project Change Summary</u>   |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| - C-5 AMP contract awarded 22 Jan 1999. Cost delta between the negotiated contract price and the AMP procurement funds budgeted in FY01, FY02 and FY03 of the FY00 PB were realigned to RDT&E for AMP and RERP. Other cost differences in AMP procurement funds in the outyears were moved to RERP procurement.  |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| - RERP RDT&E funds in FY04 and FY05 of the FY00 PB were realigned to RERP procurement.   |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| (U) <u>C. Other Program Funding Summary (\$ in Thousands)</u>  |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
|  |   | <u>FY 1999</u>                 | <u>FY 2000</u>  | <u>FY 2001</u>     | <u>FY 2002</u>  | <u>FY 2003</u>             | <u>FY 2004</u>  | <u>FY 2005</u>  | <u>Cost to</u>  | <u>Total Cost</u> |
|  |   | <u>Actual</u>                  | <u>Estimate</u> | <u>Estimate</u>    | <u>Estimate</u> | <u>Estimate</u>            | <u>Estimate</u> | <u>Estimate</u> | <u>Complete</u> |                   |
| (U)  | AF RDT&E  |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| (U)  | Other APPN  |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| (U)  | PE# 0401119F/C-5 Airlift Squadrons  |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| (U)  | Aircraft Procurement, AF, BA-5, C-5 Mods, Reliability Enhancement and Reengining Program, BP-11 | 0                              | 0               | 0                  | 17,300          | 128,725                    | 318,519         | 486,024         | Continuing      |                   |
| (U)  | PE# 0401119F/C-5 Airlift Squadrons  | 10,327                         | 27,676          | 59,578             | 114,750         | 131,531                    | 21,854          | 2,500           | 0               | 368,216           |
| (U)  | Aircraft Procurement, AF, BA-5, C-5 Mods, Avionics Modernization Program, BP-11                 |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| (U) <u>D. Acquisition Strategy</u>   |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| Reliability Enhancement and Reengining Program (RERP): Program acquisition strategy is to consider every opportunity to utilize commercially available components and processes to: modernize C-5 products and processes to meet or exceed required system performance and support, so as to renew the weapon system until 2040. The program acquisition strategy also seeks to construct a government/industry 'partnership' to identify solutions, assign responsibility and execute to achieve AMC requirements. RERP will use fleet availability, ownership cost and system performance to balance solutions against program cost. |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
| (U) <u>E. Schedule Profile</u>   |   |                                |                 |                    |                 |                            |                 |                 |                 |                   |
|  |   |                                |                 | <u>FY 1999</u>     | <u>FY 2000</u>  | <u>FY 2001</u>             |                 |                 |                 |                   |
| Project 674835   |   |                                |                 | Page 9 of 12 Pages |                 | Exhibit R-2A (PE 0401119F) |                 |                 |                 |                   |

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |                                |   |   |         | DATE    | February 2000 |
|--|--|--------------------------------|---|---|---------|---------|---------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE            |   |   |         | PROJECT |               |
| 07 - Operational System Development                  |  | 0401119F C-5 Airlift Squadrons |   |   |         | 674835  |               |
| (U)  | <u>E. Schedule Profile Continued</u>     |                                |   |   |         |         |               |
|  |  | FY 1999                        |   |   | FY 2000 | FY 2001 |               |
|  |  | 1                              | 2 | 3 | 4       | 1       | 2             |
|  |  |                                |   |   |         |         | 3             |
|  |  |                                |   |   |         |         | 4             |
| (U)  | Acquisition Strategy Panel (ASP)         |                                |   |   |         |         |               |
| (U)  | Pre-EMD Contract Award                   |                                |   |   |         | X       |               |
| (U)  | Milestone II / DAB                       |                                |   |   |         | X       |               |
| (U)  | EMD Contract Award                       |                                |   |   |         | X       |               |
| (U)  | EMD Start                                |                                |   |   |         | X       |               |
| (U)  | First Prototype Flight (FY04/2)          |                                |   |   |         |         |               |
| (U)  | LRIP Kit Installations Begin (FY04/2)    |                                |   |   |         |         |               |
| (U)  | EMD Complete (FY05/1)                    |                                |   |   |         |         |               |
| (U)  | MS IIIA (FY05/2 - B Model Prod Decision) |                                |   |   |         |         |               |
| (U)  | MS IIIB (FY08/1 - A Model Prod Decision) |                                |   |   |         |         |               |
|  | * = completed event                      |                                |   |   |         |         |               |
|  | X = planned event                        |                                |   |   |         |         |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |                                       |                   | DATE               | February 2000  | PROJECT          |
|--|---|---------------------------------------|-------------------|--------------------|----------------|------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                   |                   | 674835             |                |                  |
| <b>07 - Operational System Development</b>         |   | <b>0401119F C-5 Airlift Squadrons</b> |                   |                    |                |                  |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |                                       |                   | <u>FY 1999</u>     | <u>FY 2000</u> | <u>FY 2001</u>   |
| (U)  | System Engineering / Program Management   |                                       |                   | 0                  | 7,000          | 13,380           |
| (U)  | RERP Kit Design / Development   |                                       |                   | 0                  | 10,400         | 23,583           |
| (U)  | Prototype Fabrication / Install   |                                       |                   | 0                  | 0              | 7,670            |
| (U)  | Mission Support   |                                       |                   | 0                  | 1,366          | 2,996            |
| (U)  | Total   |                                       |                   | 0                  | 18,766         | 47,629           |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |                                       |                   |                    |                |                  |
| (U)  | <b>Performing Organizations:</b>  |                                       |                   |                    |                |                  |
|  | <u>Contractor or</u>  | <u>Contract</u>                       | <u>Performing</u> | <u>Project</u>     | <u>Budget</u>  | <u>Budget to</u> |
|  | <u>Government</u>   | <u>Method/Type</u>                    | <u>Activity</u>   | <u>Office</u>      | <u>FY 2000</u> | <u>Complete</u>  |
|  | <u>Performing</u>   | <u>Award or</u>                       | <u>EAC</u>        | <u>EAC</u>         | <u>FY 2001</u> | <u>Total</u>     |
|  | <u>Activity</u>   | <u>Obligation</u>                     |                   | <u>to FY 1999</u>  |                | <u>Program</u>   |
|  | <u>Product Development Organizations</u>  | <u>Date</u>                           |                   |                    |                |                  |
|  | WR-ALC  |                                       |                   |                    |                |                  |
|  | ASC/GRA (Pre-EMD)   | Feb 2000                              | TBD               | 0                  | 18,766         | 0                |
|  | ASC/GRA (EMD)   | Nov 2000                              | TBD               | 0                  | 0              | 209,635          |
|  | Support and Management Organizations  |                                       |                   |                    |                |                  |
|  | Test and Evaluation Organizations   |                                       |                   |                    |                |                  |
|  | 418 Test Squadron (Edwards AFB)   |                                       |                   |                    |                |                  |
| (U)  | <b>Government Furnished Property:</b>   |                                       |                   |                    |                |                  |
|  | <u>Contract</u>   | <u>Award or</u>                       | <u>Delivery</u>   | <u>Total Prior</u> | <u>Budget</u>  | <u>Budget to</u> |
|  | <u>Method/Type</u>  | <u>Obligation</u>                     | <u>Date</u>       | <u>to FY 1999</u>  | <u>FY 2000</u> | <u>Complete</u>  |
|  | <u>Item</u>   | <u>Date</u>                           |                   |                    |                | <u>Total</u>     |
|  | <u>Description</u>  |                                       |                   |                    |                | <u>Program</u>   |
|  | <u>Product Development Property</u>   |                                       |                   |                    |                |                  |
|  | N/A   |                                       |                   |                    |                |                  |

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Exhibit R-3 (PE 0401119F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                | DATE                      | February 2000     | PROJECT               |
|--|--------------------------------|---------------------------|-------------------|-----------------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE            |                           |                   | 674835                |
| 07 - Operational System Development                | 0401119F C-5 Airlift Squadrons |                           |                   |                       |
| (U) Government Furnished Property Continued:       |                                |                           |                   |                       |
| Support and Management Property                    |                                |                           |                   |                       |
| N/A  |                                |                           |                   |                       |
| Test and Evaluation Property                       |                                |                           |                   |                       |
| N/A  |                                |                           |                   |                       |
| Subtotals  |                                |                           |                   |                       |
| Subtotal Product Development                       |                                |                           |                   |                       |
| Subtotal Support and Management                    |                                |                           |                   |                       |
| Subtotal Test and Evaluation                       |                                |                           |                   |                       |
| Total Project                                      |                                |                           |                   |                       |
|  |                                | Total Prior<br>to FY 1999 | Budget<br>FY 1999 | Budget<br>FY 2000     |
|  |                                | 0                         | 0                 | 18,766                |
|  |                                |                           |                   | FY 2001               |
|  |                                |                           |                   | 47,629                |
|  |                                |                           |                   | Budget to<br>Complete |
|  |                                |                           |                   | 209,635               |
|  |                                |                           |                   | Total<br>Program      |
|  |                                |                           |                   | 276,030               |
|  |                                | 0                         | 0                 | 47,629                |
|  |                                |                           |                   | 209,635               |
|  |                                |                           |                   | 276,030               |

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Exhibit R-3 (PE 0401119F)

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PE NUMBER: 0401130F  
PE TITLE: C-17 Aircraft

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   |                        |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE    |                  |                  |                  |                  |                  |                  |                  |            |               |
| 07 - Operational System Development  |   | 0401130F C-17 Aircraft |                  |                  |                  |                  |                  |                  |                  |            |               |
| COST (\$ in Thousands)   |   | FY 1999 Actual         | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| Total Program Element (PE) Cost  |   | 120,368                | 159,019          | 176,439          | 139,443          | 119,217          | 117,722          | 112,056          | 0                | 6,845,199  |               |
| 672569   | C-17 Aircraft                                     | 120,368                | 159,019          | 131,141          | 109,992          | 107,720          | 109,898          | 112,056          | 0                | 6,751,129  |               |
| 674886   | Large Aircraft Infrared Counter Measures (LAIRCM) | 0                      | 0                | 45,298           | 29,451           | 11,497           | 7,824            | 0                | 0                | 94,070     |               |
| Quantity of RDT&E Articles   |   | 0                      | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b><br/>Airlift provides a major element of America's national security strategy and constitutes the most responsive means of meeting U.S. mobility requirements. The C-17 can perform the entire spectrum of airlift missions and is specifically designed to operate effectively and efficiently in both strategic and theater environments. The load options include troops and/or oversized/oversized/palletized cargo. The C-17 is designed to provide direct delivery of those cargo loads to austere airfields, as close as possible to the user's specified final destination. The C-17 will also use standard airfields and delivery modes. The C-17 is specifically designed to provide U.S. combat forces maximum flexibility in the selection of landing sites and support of ground forces after landing. Consequently the C-17 will land with up to 160,000 lbs payload on austere runways as small as 3,000 feet by 900 feet. The Large Aircraft Infrared Countermeasures System (LAIRCM) will provide transport and tanker aircraft an effective, active defense against shoulder-launched IR missiles.</p> |   |                        |                  |                  |                  |                  |                  |                  |                  |            |               |
| <p>(U) <b>B. Budget Activity Justification</b><br/>This program is budget activity 7, Operational System Development, because the program has completed Milestone III and is continuing producibility and performance improvements to support full-rate production and increase the operational capability of the C-17 through programmed modifications.</p>   |   |                        |                  |                  |                  |                  |                  |                  |                  |            |               |
| <p>(U) <b>C. Program Change Summary (\$ in Thousands)</b></p>  |   |                        |                  |                  |                  |                  |                  |                  |                  |            |               |
| Previous President's Budget (FY 2000 PBR)  |   |                        | FY 1999          | FY 2000          | FY 2001          |                  |                  | Total Cost       |                  |            |               |
| Appropriated Value   |   |                        | 118,228          | 170,718          | 132,307          |                  |                  | 6,766,584        |                  |            |               |
| Adjustments to Appropriated Value  |   |                        | 119,069          | 170,718          |                  |                  |                  |                  |                  |            |               |
| a. Congressional/General Reductions  |   |                        | -470             | -9,809           |                  |                  |                  |                  |                  |            |               |
| b. Small Business Innovative Research  |   |                        | -3,683           |                  |                  |                  |                  |                  |                  |            |               |
| c. Omnibus or Other Above Threshold Reprogram  |   |                        | 9,480            |                  |                  |                  |                  |                  |                  |            |               |

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Exhibit R-2 (PE 0401130F)

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Exhibit R-2 (PE 0401130F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                        | DATE    | February 2000 |
|---|--|------------------------|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE    |         |               |
| 07 - Operational System Development                 |  | 0401130F C-17 Aircraft |         |               |
| (U)   | <u>C. Program Change Summary (\$ in Thousands) Continued</u>   | FY 1999                | FY 2000 | FY 2001       |
|   |  | -3,355                 |         |               |
|   | d. Below Threshold Reprogram   | -673                   | -1,017  |               |
|   | e. Rescissions   |                        | -873    |               |
|   | f. Other   |                        |         |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR  |                        |         | 44,132        |
| (U)   | Current Budget Submit/FY 2001 PBR  | 120,368                | 159,019 | 176,439       |
| (U)   | <u>Significant Program Changes:</u>  |                        |         |               |
|   | A second project, 674886, has been added to the C-17 for the Large Aircraft Infrared Countermeasures (LAIRCM). Three aircraft have been moved from FY01 to FY03. |                        |         | 78,615        |
|   |  |                        |         | 6,845,199     |
|   |  |                        |         | Total Cost    |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |                           |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |                           | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |                           | 0401130F C-17 Aircraft   |                  |                  |                  |                  |                  |                  |                  | 672569     |               |
| COST (\$ in Thousands)  |                           | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 672569  | C-17 Aircraft             | 120,368  | 159,019          | 131,141          | 109,992          | 107,720          | 109,898          | 112,056          | 0                | 6,751,129  |               |
| <p>(U) <b>A. Mission Description</b><br/> Airlift provides essential flexibility when responding to contingencies on short notice anywhere in the world. It is a major element of America's national security strategy and constitutes the most responsive means of meeting U.S. mobility requirements. Additional airlift capability is needed for rapid deployment of combat forces in support of national objectives. Specific tasks associated with the airlift mission include deployment, employment (airland and airdrop), sustaining support, retrograde, and combat redeployment. The C-17 can perform the entire spectrum of airlift missions and is specifically designed to operate effectively and efficiently in both strategic and theater environments. The C-17 provides a vast increase in overall airlift capability necessary to replace and exceed the capabilities lost from retiring the aging C-141 fleet from the Air Force inventory. Not only can the C-17 deliver outside cargo to austere tactical environments, but it also reduces ground time during airland operations. The C-17 will perform the airlift mission well into this century. RDT&amp;E efforts support productivity enhancements and product improvements, including correction of Operational Test &amp; Evaluation (OT&amp;E) deficiencies.</p> |                           |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands) |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$65,461                  | Continue Performance Improvement Development & Testing                             |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$27,330                  | Systems Engineering / Program Management   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$16,935                  | Contractor System Test & Evaluation  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$10,642                  | Producibility Enhancement / Performance Improvement (PE/PI) Government Flight Test |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$120,368                 | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands) |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$105,669                 | Continue Performance Improvement Development & Testing                             |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$26,950                  | Systems Engineering / Program Management   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$16,400                  | Contractor System Test & Evaluation  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$10,000                  | Producibility Enhancement / Performance Improvement (PE/PI) Government Flight Test |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$159,019                 | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   |  |                 |                 |                 |                 |                 |                 |                 | DATE              | February 2000 |
|--|---|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE  |                 |                 |                 | PROJECT         |                 |                 |                 |                   |               |
| 07 - Operational System Development  |   | 0401130F C-17 Aircraft   |                 |                 |                 | 672569          |                 |                 |                 |                   |               |
| (U)  | <b>A. Mission Description Continued</b>                   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | <b>FY 2001 (\$ in Thousands)</b>                          |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | \$74,441  | Continue Performance Improvement Development & Testing                             |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | \$27,300  | Systems Engineering / Program Management   |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | \$19,400  | Contractor System Test & Evaluation  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | \$10,000  | Producibility Enhancement / Performance Improvement (PE/PI) Government Flight Test |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | \$131,141   | Total  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | <b>B. Project Change Summary</b>                          |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| Funding: A second project, 674886, has been added to the C-17 for the Large Aircraft InfraRed Countermeasures (LAIRCM).  |   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| (U)  | <b>C. Other Program Funding Summary (\$ in Thousands)</b> |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
|  |   | <b>FY 1999</b>   | <b>FY 2000</b>  | <b>FY 2001</b>  | <b>FY 2002</b>  | <b>FY 2003</b>  | <b>FY 2004</b>  | <b>FY 2005</b>  | <b>Cost to</b>  | <b>Total Cost</b> |               |
|  |   | <b>Actual</b>  | <b>Estimate</b> | <b>Estimate</b> | <b>Estimate</b> | <b>Estimate</b> | <b>Estimate</b> | <b>Estimate</b> | <b>Complete</b> |                   |               |
| (U)  | APAF, MYP, BA02, PE0401130F                               | 2,873,045  | 3,354,888       | 2,890,655       | 3,253,498       | 2,406,997       | 1,485,765       | 2,234,336       |                 | 36,734,324        |               |
| (U)  | APAF, Initial Spares, BA06, PE0401130F                    | 109,921  | 0               | 0               | 0               | 0               | 0               | 0               |                 | 842,938           |               |
| (U)  | APAF, A/C Mods, BA05, PE0401130F                          | 51,250   | 95,040          | 97,124          | 150,901         | 175,957         | 231,194         | 254,331         |                 | 1,197,256         |               |
| (U)  | MilCon, Facilities, PE0401130F                            | 70,956   | 26,100          | 13,700          | 0               | 0               | 0               | 0               |                 | 367,631           |               |
| (U)  | <b>D. Acquisition Strategy</b>                            |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| The C-17 Acquisition Strategy is based on five separate contracts to support the entire scope of the C-17 weapon system. These five contracts are: 1) a multi-year procurement (MYP) aircraft contract (to economically purchase the full complement of production aircraft) - (APAF); 2) a Producibility Enhancement and Performance Improvement (PE/PI) contract (to develop cost reduction changes, capability enhancements, and design fixes to service-revealed problems) - (RDT&E, AF); 3) a Flexible Sustainment (field support) contract (to support the current and future fielded aircraft) - (APAF); 4) a MYP engine contract (for Government Furnished Equipment [GFE] engines) - (APAF); and 5) a set of simulator and training contracts: two aircrew training systems (ATS) contracts (for aircrew simulators & training), and a maintenance training device contract (for devices & maintenance of same) - (APAF). |   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| The Congressionally-mandated Mobility Requirements Study (MRS), initially forwarded to Congress on 23 Jan 92 and updated on 28 Mar 95, validated the need for the  |   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| Project 672569   |   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| Page 4 of 11 Pages   |   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |
| Exhibit R-2A (PE 0401130F)   |   |  |                 |                 |                 |                 |                 |                 |                 |                   |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |         | DATE                   | February 2000 |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---------|------------------------|---------------|---------|---------|---------|--|---------|--|---------|--|--|---|---|---|---|---|---|--------------------------|--|--|--|--|--|--|------------------------------------|--|--|--|--|--|--|---------------------------|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|----------------------------|--|--|--|--|--|--|------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| BUDGET ACTIVITY   |         | PE NUMBER AND TITLE    |               | PROJECT |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 07 - Operational System Development   |         | 0401130F C-17 Aircraft |               | 672569  |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>D. Acquisition Strategy Continued</b><br/>           C-17 aircraft. Two C-17 Defense Acquisition Board (DAB) decisions, contained in the 3 Nov 95 and 1 Feb 96 USD(A&amp;T) Acquisition Decision Memoranda (ADMs), directed the Air Force to proceed with a 120-aircraft production program and pursue a multi-year procurement for the last 80 aircraft. The FY96 Supplemental Appropriations Act and FY97 Defense Appropriations Act approved a 7-year MYP program. The Air Force is proceeding with an 80-aircraft MYP program (along with engines to support them) to complete a 120-aircraft total purchase at the maximum affordable rate (FY97-03 Quantity: 8-9-13-15-12-15-8), beginning with the economic order quantity (EOQ) funding in FY96. Fourteen additional C-17s have been programmed at the end of the 80-aircraft MYP (FY03 +1, FY04 +5, FY05 +8) to replace Air Mobility Command's (AMC's) C-141 Special Operations Low Level (SOLL) II aircraft and meet requirements not included in the 120 aircraft program. The adjusted program is: FY03, 9; FY04, 5; FY05, 8.</p>   |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>E. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) Lot XI (13 aircraft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Lot XII Adv Proc (15 aircraft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Lot XII (15 aircraft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Lot XIII Adv Proc (15 aircraft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Lot XIII (12 aircraft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Lot XIV Adv Proc (15 aircraft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="7">           * = completed event - contract obligation<br/>           X = planned event - contract obligation         </td> </tr> </tbody> </table> |         |                        |               |         |         | FY 1999 |  | FY 2000 |  | FY 2001 |  |  | 1 | 2 | 3 | 4 | 1 | 2 | (U) Lot XI (13 aircraft) |  |  |  |  |  |  | (U) Lot XII Adv Proc (15 aircraft) |  |  |  |  |  |  | (U) Lot XII (15 aircraft) |  |  |  |  |  |  | (U) Lot XIII Adv Proc (15 aircraft) |  |  |  |  |  |  | (U) Lot XIII (12 aircraft) |  |  |  |  |  |  | (U) Lot XIV Adv Proc (15 aircraft) |  |  |  |  |  |  | * = completed event - contract obligation<br>X = planned event - contract obligation |  |  |  |  |  |  |
|   | FY 1999 |                        | FY 2000       |         | FY 2001 |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
|   | 1       | 2                      | 3             | 4       | 1       | 2       |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Lot XI (13 aircraft)  |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Lot XII Adv Proc (15 aircraft)  |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Lot XII (15 aircraft)   |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Lot XIII Adv Proc (15 aircraft)   |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Lot XIII (12 aircraft)  |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Lot XIV Adv Proc (15 aircraft)  |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * = completed event - contract obligation<br>X = planned event - contract obligation  |         |                        |               |         |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                          |  |  |  |  |  |  |                                    |  |  |  |  |  |  |                           |  |  |  |  |  |  |                                     |  |  |  |  |  |  |                            |  |  |  |  |  |  |                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |             |            |            |                        |         |               |         |           |
|--|---|-------------|------------|------------|------------------------|---------|---------------|---------|-----------|
| BUDGET ACTIVITY                                    |   |             |            |            | PE NUMBER AND TITLE    |         | DATE          |         |           |
| 07 - Operational System Development                |   |             |            |            | 0401130F C-17 Aircraft |         | February 2000 |         |           |
|  |   |             |            |            |                        |         | PROJECT       |         |           |
|  |   |             |            |            |                        |         | 672569        |         |           |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |             |            |            | FY 1999                | FY 2000 | FY 2001       | FY 2000 | FY 2001   |
| (U)  | Contractor Furnished Engineering & Test   |             |            |            | 109,213                | 146,399 | 120,421       | 146,399 | 120,421   |
| (U)  | Government Test & Other Government Costs (OGC)                                  |             |            |            | 11,155                 | 12,620  | 10,720        | 12,620  | 10,720    |
| (U)  | Total   |             |            |            | 120,368                | 159,019 | 131,141       | 159,019 | 131,141   |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |             |            |            |                        |         |               |         |           |
| (U)  | <u>Performing Organizations:</u>  |             |            |            |                        |         |               |         |           |
|  | Contractor or   | Contract    |            |            |                        |         |               |         |           |
|  | Government  | Method/Type | Award or   | Performing | Project                |         |               |         |           |
|  | Performing  | or Funding  | Obligation | Activity   | Office                 |         |               |         |           |
|  | Activity  | Vehicle     | Date       | EAC        | EAC                    |         |               |         |           |
|  | <u>Product Development Organizations</u>  |             |            |            | Total Prior            | Budget  | Budget        | Budget  | Total     |
|  |   |             |            |            | to FY 1999             | FY 1999 | FY 2000       | FY 2001 | Program   |
|  | Boeing  | C,FPI/FP    | 8/31/81    | 5,190,366  | 5,190,366              | 0       | 146,299       | 120,221 | 0         |
|  | Boeing  | C,CPFF      | 7/13/95    | 1,025,425  | 233,073                | 108,813 | 146,299       | 399,326 | 5,190,366 |
|  | Pratt & Whitney   | C,FP        | 5/24/91    | 25,346     | 25,346                 | 0       | 0             | 0       | 1,007,732 |
|  | Boeing  | C,FPI       | 4/14/89    | 83,885     | 83,885                 | 0       | 0             | 0       | 25,346    |
|  | Pratt & Whitney   | FP+EPA      | 4/18/95    | 8,306      | 7,506                  | 400     | 100           | 200     | 83,885    |
|  | <u>Support and Management Organizations</u>                                     |             |            |            |                        |         |               |         | 8,306     |
|  | Mission Support OGC   | PO          |            |            | 97,389                 | 113     | 120           | 240     | 97,982    |
|  | Site Activation OGC   | PO          |            |            | 1,539                  | 0       | 0             | 0       | 1,539     |
|  | Miscellaneous   |             |            |            | 21,958                 | 400     | 2,500         | 600     | 25,458    |
|  | <u>Test and Evaluation Organizations</u>  |             |            |            |                        |         |               |         |           |
|  | Combined Test Force   | PO          |            |            | 226,591                | 10,642  | 10,000        | 40,000  | 297,233   |
|  | Wright Labs/Arnold Eng  | PO          |            |            | 10,252                 |         |               | 0       | 10,252    |
|  | Dev Center  |             |            |            |                        |         |               |         |           |
|  | Other   | PO          |            |            | 3,030                  |         |               | 0       | 3,030     |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                        |                        |                        | DATE           | February 2000  | PROJECT            |
|--|------------------------|------------------------|------------------------|----------------|----------------|--------------------|
| BUDGET ACTIVITY                                    |                        | PE NUMBER AND TITLE    |                        |                |                |                    |
| 07 - Operational System Development                |                        | 0401130F C-17 Aircraft |                        | 672569         |                |                    |
| (U) Government Furnished Property:                 |                        |                        |                        |                |                |                    |
| Contract   |                        |                        |                        |                |                |                    |
| Item   | Method/Type or Funding | Award or Obligation    | Delivery               |                |                |                    |
| Description  | Vehicle                | Date                   | Date                   |                |                |                    |
| Product Development Property                       |                        |                        |                        |                |                |                    |
| None   |                        |                        |                        |                |                |                    |
| Support and Management Property                    |                        |                        |                        |                |                |                    |
| None   |                        |                        |                        |                |                |                    |
| Test and Evaluation Property                       |                        |                        |                        |                |                |                    |
| None   |                        |                        |                        |                |                |                    |
| Subtotals  |                        |                        |                        |                |                |                    |
| Subtotal Product Development                       |                        |                        | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete |
|  |                        |                        | 5,540,176              | 109,213        | 146,399        | 399,426            |
|  |                        |                        | 120,886                | 513            | 2,620          | 240                |
| Subtotal Support and Management                    |                        |                        | 239,873                | 10,642         | 10,000         | 40,000             |
| Subtotal Test and Evaluation                       |                        |                        | 5,900,935              | 120,368        | 159,019        | 439,666            |
| Total Project                                      |                        |                        |                        |                |                |                    |
|  |                        |                        |                        |                |                | 6,315,635          |
|  |                        |                        |                        |                |                | 124,979            |
|  |                        |                        |                        |                |                | 310,515            |
|  |                        |                        |                        |                |                | 6,751,129          |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |   |                        |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE    |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |   | 0401130F C-17 Aircraft |                  |                  |                  |                  |                  |                  |                  | 674886     |               |
| COST (\$ in Thousands)   |   | FY 1999 Actual         | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674886   | Large Aircraft Infrared Counter Measures (LAIRCM) | 0                      | 0                | 45,298           | 29,451           | 11,497           | 7,824            | 0                | 0                | 94,070     |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The Large Aircraft Infrared Countermeasures System (LAIRCM) provides advanced defensive capability against Man-Portable Air Defense Systems (MANPADS) for large transport and tanker aircraft. LAIRCM is significantly more effective than the traditional employment of flares, and requires no operator intervention after it is turned on. LAIRCM consists of two advanced integrated missile warning systems and an active laser countermeasures system. There is a multi-service Operational Requirements Document (ORD) -- LAIRCM ORD 314-92, validated 3 Aug 98. Installation of this system will increase the survivability of strategic aircraft when operating in areas with MANPADS IR threats. Since this system will integrate subsystems, initial deployment should be achieved by FY03. RDT&amp;E funds will be used for non-recurring engineering (NRE) and integration test and evaluation.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u></p> <p>(U) \$0 No Activity</p> <p>(U) \$0 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u></p> <p>(U) \$0 No Activity</p> <p>(U) \$0 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u></p> <p>(U) \$41,898 Award contract to begin aircraft integration for existing subsystems.</p> <p>(U) \$3,400 ProgramOffice Support (SPO TDY, training and supplies)</p> <p>(U) \$45,298 Total</p> <p>(U) <b>B. Project Change Summary</b></p> <p>LAIRCM is a NEW START in FY01.</p> |   |                        |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |         |          |          |          |          |          |          |          |            | DATE                   | February 2000 |
|--|---------|----------|----------|----------|----------|----------|----------|----------|------------|------------------------|---------------|
| BUDGET ACTIVITY  |         |          |          |          |          |          |          |          |            | PROJECT                |               |
| 07 - Operational System Development  |         |          |          |          |          |          |          |          |            | 674886                 |               |
| PE NUMBER AND TITLE  |         |          |          |          |          |          |          |          |            | 0401130F C-17 Aircraft |               |
| (U) C. Other Program Funding Summary (\$ in Thousands)   |         |          |          |          |          |          |          |          |            |                        |               |
|  | FY 1999 | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to  | Total Cost |                        |               |
|  | Actual  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete |            |                        |               |
| (U) AF RDT&E   |         |          |          |          |          |          |          |          |            |                        |               |
| (U) PE 401115, C-130 RDT&E   | 0       | 0        | 32,724   | 8,623    | 5,448    | 0        | 0        | 0        | 46,795     |                        |               |
| (U) Other APPN   |         |          |          |          |          |          |          |          |            |                        |               |
| (U) PE 41130F, LAIRCM  | 0       | 0        | 0        | 33,100   | 51,200   | 48,600   | 6,200    | 7,000    | 146,100    |                        |               |
| Procurement, BP 1100   |         |          |          |          |          |          |          |          |            |                        |               |
| (U) PE, 41115F, C-130  | 0       | 0        | 0        | 0        | 33,400   | 48,900   | 6,000    | 7,000    | 95,300     |                        |               |
| Procurement, BP1100  |         |          |          |          |          |          |          |          |            |                        |               |
| (U) D. Acquisition Strategy  |         |          |          |          |          |          |          |          |            |                        |               |
| The LAIRCM system for the first 12 C-17s will probably be a sole source to Boeing since aircraft is currently in production in order to facilitate initial deployment in FY03. |         |          |          |          |          |          |          |          |            |                        |               |
| (U) E. Schedule Profile  |         |          |          |          |          |          |          |          |            |                        |               |
|  | FY 1999 |          | FY 2000  |          | FY 2001  |          |          |          |            |                        |               |
|  | 1       | 2        | 3        | 4        | 1        | 2        | 3        | 4        | 1          | 2                      | 3             |
| (U) Phase I - EMD  |         |          |          |          |          |          |          |          |            | X                      | 4             |
| (U) Phase II -First Installation: FY03/3   |         |          |          |          |          |          |          |          |            |                        |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                        |                        |                |                |                |
|--|--|---|--------------------------|-------------------------|------------------------|------------------------|----------------|----------------|----------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         | DATE                   |                        | PROJECT        |                |                |
| 07 - Operational System Development                |  |   |                          |                         | 0401130F C-17 Aircraft |                        | February 2000  |                |                |
| PE NUMBER AND TITLE                                |  |   |                          |                         | 0401130F C-17 Aircraft |                        | 674886         |                |                |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         | FY 1999                | FY 2000                | FY 2001        | FY 2001        |                |
| (U)  | Performance Development  |   |                          |                         | 0                      | 0                      | 41,898         | 41,898         |                |
| (U)  | Systems Engineering/Program Management                                   |   |                          |                         | 0                      | 0                      | 3,400          | 3,400          |                |
| (U)  | Total  |   |                          |                         | 0                      | 0                      | 45,298         | 45,298         |                |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                        |                        |                |                |                |
| (U)  | Performing Organizations:  |   |                          |                         |                        |                        |                |                |                |
|  | Contract or Government Performing Activity                               | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 |
|  | Product Development Organizations  |   |                          |                         |                        |                        |                |                |                |
|  | Prime contractor: TBD  | TBD                                     | FY01/3                   |                         |                        | 0                      | 0              | 0              | 41,898         |
|  | Support and Management Organizations                                     |   |                          |                         |                        | 0                      | 0              | 0              | 3,400          |
|  | SPO  |   | FY01/1                   |                         |                        | 0                      | 0              | 0              | 0              |
|  | Test and Evaluation Organizations  |   |                          |                         |                        | 0                      | 0              | 0              | 0              |
|  | TBD  |   |                          |                         |                        |                        |                |                |                |
| (U)  | Government Furnished Property:   |   |                          |                         |                        |                        |                |                |                |
|  | Contract   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget FY 2001 | Total Program  |
|  | Item Description   |   |                          |                         |                        |                        |                |                |                |
|  | Product Development Property   |   |                          |                         |                        |                        |                |                |                |
|  | N/A  |   |                          |                         |                        |                        |                |                |                |
|  | Support and Management Property  |   |                          |                         |                        |                        |                |                |                |
|  | N/A  |   |                          |                         |                        |                        |                |                |                |
|  | Test and Evaluation Property   |   |                          |                         |                        |                        |                |                |                |
|  | N/A  |   |                          |                         |                        |                        |                |                |                |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                        |         |               |         |           |         |  |  |
|--|--|------------------------|---------|---------------|---------|-----------|---------|--|--|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE    |         | DATE          | PROJECT |           |         |  |  |
| 07 - Operational System Development                |  | 0401130F C-17 Aircraft |         | February 2000 | 674886  |           |         |  |  |
|  |  | Total Prior            | Budget  | Budget        | Budget  | Budget to | Total   |  |  |
|  |  | to FY 1999             | FY 1999 | FY 2000       | FY 2001 | Complete  | Program |  |  |
| <u>Subtotals</u>                                   |  |                        |         |               |         |           |         |  |  |
| Subtotal Product Development                       |  | 0                      | 0       | 0             | 41,898  | 42,372    | 84,270  |  |  |
| Subtotal Support and Management                    |  | 0                      | 0       | 0             | 3,400   | 6,400     | 9,800   |  |  |
| Subtotal Test and Evaluation                       |  | 0                      | 0       | 0             | 0       | 0         | 0       |  |  |
| Total Project                                      |  | 0                      | 0       | 0             | 45,298  | 48,772    | 94,070  |  |  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                     |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|-------------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                                     | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                                     | 0401214F Air Cargo Materiel Handling (463-L)   |                  |                  |                  |                  |                  |                  |                  | 675150     |               |
| COST (\$ in Thousands)   |                                     | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 675150   | Next Generation Small Loader (NGSL) | 456  | 493              | 0                | 0                | 0                | 0                | 0                | 0                | 8,898      |               |
|  | Quantity of RDT&E Articles          | 2  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 6          |               |
| <p>(U) <b>A. Mission Description</b></p> <p>This program element contains a project integral to the Air Force's ability to mobilize forces and equipment worldwide. It involves testing, developing and fielding the NGSL, which alleviates critical loader deficiencies and provides the Air Force with a state-of-the-art tactical loader capability for the future. The NGSL (25K pound capacity) program supports acquisition and delivery of a minimum requirement of 264 loaders that, with the Tunner (60K), will form the backbone of the Global Reach airlift 463-L (pallet) movement system. The NGSL replaces aging 25K loaders and complements the Tunner fleet by providing increased deployability and cargo handling capacity at smaller, but operationally vital peacetime and contingency airfields. More importantly, the NGSL has a high reach capability required for direct interface with Wide-Body Aircraft (WBA). This improved capability eliminates the current requirement for a fleet of wide-body elevator loader equipment used in conjunction with both the 40K and 25K loaders to service WBA. The NGSL, along with the Tunner, will eventually replace all of the 40K loaders and selected worn-out 25K loaders. Starting in FY97, the Air Force realigned Loader RDT&amp;E funding from PE 0604704F, Common Support Equipment Development, into this dedicated program element, which also contains the procurement funding.</p> |                                     |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)           |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$435                               | Engineering analysis for preproduction testing; GFE/GFP for preproduction testing; travel supporting preproduction testing |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$21                                | Acquire and test preproduction test articles   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$456                               | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)           |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$493                               | Engineering analysis for preproduction testing; GFE/GFP for preproduction testing; travel supporting preproduction testing |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$493                               | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2001 (\$ in Thousands)           |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0                                 | No Activity  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$0                                 | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 675150

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Exhibit R-2 (PE 0401214F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |  |          | DATE     | February 2000 |
|---|---|--|----------|----------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                          |          | PROJECT  |               |
| 07 - Operational System Development                 |   | 0401214F Air Cargo Materiel Handling (463-L) |          | 675150   |               |
| (U)   | <b>B. Budget Activity Justification</b><br>Acquisition of the NGSL to support operational mobility aircraft requires no significant development effort; therefore, it is categorized as BA-7, operational system development. |  |          |          |               |
| (U)   | <b>C. Program Change Summary (\$ in Thousands)</b>  |  |          |          |               |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999                                      | FY 2000  | FY 2001  | Total Cost    |
| (U)   | Appropriated Value  | 482  | 502      |          | 7,439         |
| (U)   | Adjustments to Appropriated Value   | 512  | 502      |          |               |
|   | a. Congressional/General Reductions   | -30  | -6       |          |               |
|   | b. Small Business Innovative Research   |  |          |          |               |
|   | c. Omnibus or Other Above Threshold Reprogram   | -23  |          |          |               |
|   | d. Below Threshold Reprogram  | -3   | -3       |          |               |
|   | e. Rescissions  |  |          |          |               |
|   | f. Other  |  |          |          |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |  |          |          |               |
| (U)   | Current Budget Submit/FY 2001 PBR   | 456  | 493      |          | 8,898         |
| (U)   | <b>Significant Program Changes:</b>   |  |          |          |               |
|   | None  |  |          |          |               |
| (U)   | <b>D. Other Program Funding Summary (\$ in Thousands)</b>   |  |          |          |               |
|   |   | FY 1999                                      | FY 2000  | FY 2001  | FY 2002       |
|   |   | Actual                                       | Estimate | Estimate | Estimate      |
| (U)   | AF RDT&E  |  |          |          |               |
| (U)   | Other APPN  |  |          |          |               |
| (U)   | Other Procurement, AF,  | 0  | 9,669    | 24,144   | 59,170        |
|   | BA-2, WSC 825150, Next  |  |          |          |               |
|   | Generation Small Loader, PE   |  |          |          |               |
|   | 0401214F  |  |          |          |               |
|   |   |  |          | 29,421   | 0             |
|   |   |  |          |          | 181,414       |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |         | DATE   | February 2000 |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| BUDGET ACTIVITY   |         | PE NUMBER AND TITLE                          | PROJECT       |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 07 - Operational System Development   |         | 0401214F Air Cargo Materiel Handling (463-L) | 675150        |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>E. Acquisition Strategy</b></p> <p>The NGS� (25K pound capacity) program supports acquisition and delivery of a minimum requirement of 264 loaders that, with the Tunner (60K), will form the backbone of the Global Reach airlift 463-L (pallet) movement system. Currently, the Air Force uses a 30-year-old 25K loader with an extremely low mean time between failure (approx. 10 hours). Additionally, the 25K loader lacks high reach capability and requires a separate wide body elevator loader (a fixed based high lift transfer platform) to off/on load KC-10 and Civil Reserve Air Fleet (CRAF) Wide-Body Aircraft (WBA). Upgrading the current loader fleet with the NGS� will correct the critical high-reach shortcomings of existing 25K loaders and will provide increased flexibility to ensure the Air Force meets its global mobility commitments. The NGS� program has selected two Non-Developmental Item (NDI) loader manufacturers to build three loaders each. Loaders will compete in a 'drive-off' competition, and the winner will be awarded a follow-on production contract (Firm Fixed Price).</p>  |         |  |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>(U) <b>F. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="3">FY 1999</th> <th colspan="3">FY 2000</th> <th colspan="3">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>(U) NGS� Program Transition to ASC</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Test article contract award</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Competitive drive-off (start)</td> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) LRIP Award</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>(U) First Delivery</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Full-Rate Production</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="13">           * Denotes completed milestone<br/>           X Denotes planned milestone         </td> </tr> </tbody> </table> |         |  |               |         | FY 1999 |   |         | FY 2000 |   |   | FY 2001 |   |  |  | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | (U) NGS� Program Transition to ASC |  |  |  |  |  |  |  |  |  |  |  |  | (U) Test article contract award | * |  |  |  |  |  |  |  |  |  |  |  | (U) Competitive drive-off (start) |  |  |  | * |  |  |  |  |  |  |  |  | (U) LRIP Award |  |  |  |  |  |  |  |  |  | X |  |  | (U) First Delivery |  |  |  |  |  |  |  |  |  |  |  |  | (U) Full-Rate Production |  |  |  |  |  |  |  |  |  |  |  |  | * Denotes completed milestone<br>X Denotes planned milestone |  |  |  |  |  |  |  |  |  |  |  |  |
|   | FY 1999 |  |               | FY 2000 |         |   | FY 2001 |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| (U) NGS� Program Transition to ASC  |         |  |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Test article contract award   | *       |  |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Competitive drive-off (start)   |         |  |               | *       |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) LRIP Award  |         |  |               |         |         |   |         |         |   | X |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) First Delivery  |         |  |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (U) Full-Rate Production  |         |  |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * Denotes completed milestone<br>X Denotes planned milestone  |         |  |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project 675150  |         | Page 3 of 4 Pages                            |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Exhibit R-2 (PE 0401214F)   |         | 1609   |               |         |         |   |         |         |   |   |         |   |  |  |   |   |   |   |   |   |   |   |   |   |   |   |                                    |  |  |  |  |  |  |  |  |  |  |  |  |                                 |   |  |  |  |  |  |  |  |  |  |  |  |                                   |  |  |  |   |  |  |  |  |  |  |  |  |                |  |  |  |  |  |  |  |  |  |   |  |  |                    |  |  |  |  |  |  |  |  |  |  |  |  |                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |  |                        |                |                |                    |
|--|--|---|--------------------------|-------------------------|--|------------------------|----------------|----------------|--------------------|
| BUDGET ACTIVITY                                    |  |   |                          |                         | DATE   |                        | PROJECT        |                |                    |
| 07 - Operational System Development                |  |   |                          |                         | February 2000                                |                        | 675150         |                |                    |
| PE NUMBER AND TITLE                                |  |   |                          |                         | 0401214F Air Cargo Materiel Handling (463-L) |                        |                |                |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)  |   |                          |                         | FY 1999                                      | FY 2000                | FY 2001        | FY 2001        |                    |
| (U)  | Acquire and test preproduction articles  |   |                          |                         | 21   | 0                      | 0              | 0              |                    |
| (U)  | Test monitoring, engineering tech. order development, SPO travel, equipment, program management support. |   |                          |                         | 435  | 493                    | 0              | 0              |                    |
| (U)  | Total  |   |                          |                         | 456  | 493                    | 0              | 0              |                    |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands)                                 |   |                          |                         |  |                        |                |                |                    |
| (U)  | Performing Organizations:  |   |                          |                         |  |                        |                |                |                    |
|  | Contractor or Government Performing Activity   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC                           | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete |
|  | Product Development Organizations  |   |                          |                         |  |                        |                |                |                    |
|  | WR-ALC/LEA   | FFP/PR                                  | FY98/2                   |                         |  | 643                    |                |                | 0                  |
|  | ASC/SMG  | FFP/PR                                  | FY99/1                   |                         |  | 6,578                  | 21             |                | 0                  |
|  | ASC/SMG  | FFP/PR                                  | FY00/4                   |                         |  | 400                    | 435            | 493            | 0                  |
|  | Support and Management Organizations   |   |                          |                         |  |                        |                |                |                    |
|  | Technical Support Contract   |   |                          |                         |  |                        |                |                |                    |
|  | Test and Evaluation Organizations  |   |                          |                         |  |                        |                |                |                    |
|  | Subtotals  |   |                          |                         |  |                        |                |                |                    |
|  | Subtotal Product Development   |   |                          |                         |  |                        |                | Budget FY 2000 | Budget to Complete |
|  | Subtotal Support and Management  |   |                          |                         |  |                        |                | 493            | 0                  |
|  | Subtotal Test and Evaluation   |   |                          |                         |  |                        |                |                | 0                  |
|  | Total Project  |   |                          |                         |  |                        |                |                | 0                  |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                               |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|-------------------------------|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |                               | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |                               | 0401218F KC-135s  |                  |                  |                  |                  |                  |                  |                  | 674494     |               |
|  | COST (\$ in Thousands)        | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674494   | KC-135 Aging Aircraft Program | 1,018   | 2,242            | 487              | 484              | 490              | 499              | 510              | Continuing       | TBD        |               |
|  | Quantity of RDT&E Articles    | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b></p> <p>This program, in part, supports the aging aircraft corrosion and fatigue project CORAL REACH. CORAL REACH studies include the analysis and testing efforts in the area of aging aircraft, to include structural, corrosion, fatigue, and stress corrosion cracking. Additionally, the Functional System Integrity Program proactively examines individual aircraft systems for potential impacts due to aging components. The USAF will utilize these activities to improve KC-135 Programmed Depot Maintenance efficiency and to provide direction for future aging aircraft efforts to maintain the KC-135 as a viable airframe. CORAL REACH results provide accurate data for incorporation into the KC-135 Economic Life Study planned for FY00. The KC-135 Economic Life Study consists of studies for structure, systems, and component support as well as cost benefit analyses to support an Analysis of Alternatives (AOA). The AOA addresses replacement schedules for the KC-135 based on economic decision points.</p> |                               |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)     |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$270                         | Corrosion/crack growth rate and fatigue determination and testing |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$534                         | Functional Systems Integrity Program (FSIP)                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$214                         | Mission support/contractor support                                |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,018                       | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)     |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$100                         | Corrosion/crack growth rate and fatigue determination and testing |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$950                         | Functional Systems Integrity Program (FSIP)                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$192                         | Mission support/contractor support                                |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$1,000                       | Economic Service Life Study                                       |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,242                       | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 674494

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Exhibit R-2 (PE 0401218F)

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| BUDGET ACTIVITY  | PE NUMBER AND TITLE     | DATE                 | PROJECT          |
|--|-------------------------|----------------------|------------------|
| <b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>   |                         | <b>February 2000</b> |                  |
| <b>07 - Operational System Development</b>   | <b>0401218F KC-135s</b> |                      | <b>674494</b>    |
| (U) A. Mission Description Continued   |                         |                      |                  |
| (U) FY 2001 (\$ in Thousands)  |                         |                      |                  |
| (U) \$192 Corrosion/crack growth rate and fatigue determination and testing  |                         |                      |                  |
| (U) \$50 Basic materials test and predictive technique   |                         |                      |                  |
| (U) \$245 Mission support/contractor support   |                         |                      |                  |
| (U) \$487 Total  |                         |                      |                  |
| (U) B. Budget Activity Justification   |                         |                      |                  |
| This effort is a low technical risk effort supporting a fielded weapon system and, therefore, is assigned to Budget Activity 7, Operational Systems Development. |                         |                      |                  |
| (U) C. Program Change Summary (\$ in Thousands)  |                         |                      | Total Cost       |
| (U) Previous President's Budget (FY 2000 PBR)  | FY 1999                 | FY 2000              | TBD              |
| (U) Appropriated Value   | 1,090                   | 2,268                | TBD              |
| (U) Adjustments to Appropriated Value  | 1,093                   | 2,268                |                  |
| a. Congressional/General Reductions  | -3                      | -14                  | TBD              |
| b. Small Business Innovative Research  | -33                     |                      | TBD              |
| c. Omnibus or Other Above Threshold Reprogram  |                         | -12                  | TBD              |
| d. Below Threshold Reprogram   | -33                     |                      | TBD              |
| e. Rescissions   | -6                      |                      | TBD              |
| f. Other   |                         |                      | TBD              |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |                         |                      |                  |
| (U) Current Budget Submit/FY 2001 PBR  | 1,018                   | 2,242                | -5<br>487        |
| (U) Significant Program Changes:   |                         |                      |                  |
| N/A.   |                         |                      |                  |
| (U) D. Other Program Funding Summary (\$ in Thousands)   |                         |                      | Total Cost       |
|  | FY 1999 Actual          | FY 2000 Estimate     | FY 2001 Estimate |
| (U) AF RDT&E   |                         |                      | Cost to Complete |
| (U) Other APPN   |                         |                      |                  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                     | DATE                    | February 2000 |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
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| BUDGET ACTIVITY  | PE NUMBER AND TITLE | PROJECT                 |               | 674494                    |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| <b>07 - Operational System Development</b>   |                     | <b>0401218F KC-135s</b> |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| <p>(U) <b>E. Acquisition Strategy</b><br/>           The acquisition strategy consists primarily of separate task orders (with separate statements of work) ranging from fixed price to cost plus contracts. These task orders address a myriad of aging aircraft activities against existing contract vehicles, such as the SPO-managed KC-135 Fleet Support Contract and Design Engineering Program contracts managed through the Air Logistics Centers.</p>   |                     |                         |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| <p>(U) <b>F. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) Corrosion &amp; Fatigue Testing</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Materials Test &amp; Predictive Tech.</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) FSIP</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Mission Support</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Begin Economic Service Life Study</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> </tr> <tr> <td colspan="7">           * - On-going activities<br/>           X - Scheduled activities         </td> </tr> </tbody> </table> |                     |                         |               |                           |         | FY 1999 |  | FY 2000 |  | FY 2001 |  |  | 1 | 2 | 3 | 4 | 1 | 2 | (U) Corrosion & Fatigue Testing | * |  |  |  |  |  | (U) Materials Test & Predictive Tech. | * |  |  |  |  |  | (U) FSIP | * |  |  |  |  |  | (U) Mission Support | * |  |  |  |  |  | (U) Begin Economic Service Life Study |  |  |  |  | X |  | * - On-going activities<br>X - Scheduled activities |  |  |  |  |  |  |
|  | FY 1999             |                         | FY 2000       |                           | FY 2001 |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
|  | 1                   | 2                       | 3             | 4                         | 1       | 2       |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| (U) Corrosion & Fatigue Testing  | *                   |                         |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| (U) Materials Test & Predictive Tech.  | *                   |                         |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| (U) FSIP   | *                   |                         |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| (U) Mission Support  | *                   |                         |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| (U) Begin Economic Service Life Study  |                     |                         |               |                           | X       |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| * - On-going activities<br>X - Scheduled activities  |                     |                         |               |                           |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |
| Project 674494   |                     | Page 3 of 5 Pages       |               | Exhibit R-2 (PE 0401218F) |         |         |  |         |  |         |  |  |   |   |   |   |   |   |                                 |   |  |  |  |  |  |                                       |   |  |  |  |  |  |          |   |  |  |  |  |  |                     |   |  |  |  |  |  |                                       |  |  |  |  |   |  |   |  |  |  |  |  |  |

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### RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 2000

PE NUMBER AND TITLE

0401218F KC-135s

**674494**

| <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |   |  |                                 |                                |                           |                               |                       |                       |                       |                           |
|---|---|--|---------------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------|-----------------------|-----------------------|---------------------------|
|   |   |  |                                 |                                |                           |                               |                       | <u>FY 1999</u>        | <u>FY 2000</u>        | <u>FY 2001</u>            |
| (U)   | Corrosion/crack growth determination and testing    |  |                                 |                                |                           |                               |                       | 270                   | 100                   | 192                       |
| (U)   | Basic materials test and predictive technique       |  |                                 |                                |                           |                               |                       | 0                     | 0                     | 50                        |
| (U)   | Functional Systems Integrity Program (FSIP)         |  |                                 |                                |                           |                               |                       | 534                   | 950                   | 0                         |
| (U)   | Mission support/contractor support                  |  |                                 |                                |                           |                               |                       | 214                   | 192                   | 245                       |
| (U)   | Economic service life study                         |  |                                 |                                |                           |                               |                       | 0                     | 1,000                 | 0                         |
| (U)   | Total   |  |                                 |                                |                           |                               |                       | 1,018                 | 2,242                 | 487                       |
| <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |   |  |                                 |                                |                           |                               |                       |                       |                       |                           |
| (U)   | <u>Performing Organizations:</u>                    |  |                                 |                                |                           |                               |                       |                       |                       |                           |
|   | <u>Contractor or Government Performing Activity</u> | <u>Contract Method/Type or Funding Vehicle</u> | <u>Award or Obligation Date</u> | <u>Performing Activity EAC</u> | <u>Project Office EAC</u> | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u> | <u>Budget FY 2001</u> | <u>Budget to Complete</u> |
|   | <u>Product Development Organizations</u>            |  |                                 |                                |                           |                               |                       |                       |                       |                           |
|   | Boeing  | C/KC-135 Fleet Support SS/FFP                  | Oct 97- Mar 01                  | TBD                            | TBD                       | 2,022                         | 766                   | 2,056                 | 250                   | Continuing                |
|   | <u>Support and Management Organizations</u>         |  |                                 |                                |                           |                               |                       |                       |                       |                           |
|   | ARINC, Frontier, other support contractors          | Design Engineering Program (DEP) C/FP          | Oct 97- Mar 01                  |                                |                           | 148                           | 109                   | 86                    | 237                   | Continuing                |
|   | <u>Test and Evaluation Organizations</u>            |  |                                 |                                |                           |                               |                       |                       |                       |                           |
|   | FAA, Wright Labs, etc.                              | Project Order/MPIR                             | Oct 97- Mar 01                  |                                |                           | 100                           | 143                   | 100                   |                       | Continuing                |
|   |   |  |                                 |                                |                           |                               |                       |                       |                       | TBD                       |

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Exhibit R-3 (PE 0401218F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |                     |                | DATE           | February 2000  |
|--|--|---------------------|----------------|----------------|----------------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE |                | PROJECT        |                |
| 07 - Operational System Development                |  | 0401218F KC-135s    |                | 674494         |                |
| <u>Subtotals</u>                                   |  | <u>Total Prior</u>  | <u>Budget</u>  | <u>Budget</u>  | <u>Total</u>   |
|  |  | <u>to FY 1999</u>   | <u>FY 1999</u> | <u>FY 2001</u> | <u>Program</u> |
| Subtotal Product Development                       |  | 2,022               | 766            | 250            | TBD            |
| Subtotal Support and Management                    |  | 148                 | 109            | 237            | TBD            |
| Subtotal Test and Evaluation                       |  | 100                 | 143            |                | TBD            |
| Total Project                                      |  | 2,270               | 1,018          | 487            | TBD            |

Project 674494

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Exhibit R-3 (PE 0401218F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |   |                     |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|--|---|---------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY  |   | PE NUMBER AND TITLE |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development  |   | 0401219F KC-10S     |                  |                  |                  |                  |                  |                  |                  | 674496     |               |
|  | COST (\$ in Thousands)                        | FY 1999 Actual      | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674496   | KC-10 GATM                                    | 9,447               | 23,331           | 19,526           | 0                | 0                | 0                | 0                | 0                | 52,304     |               |
|  | Quantity of RDT&E Articles                    | 0                   | 1                | 0                | 0                | 0                | 0                | 0                | 0                | 1          |               |
| <p>(U) <b>A. Mission Description</b></p> <p>Global Air Traffic Management (GATM) is based on evolving Communication, Navigation and Surveillance (CNS) and Free Flight concepts. Key elements of its architecture are Flight Management System (FMS), Dual Multi-Mode Receiver (MMR), Dual Communications Management Unit (CMU), Communications Datalinks (HF, VHF, SATCOM). Communications upgrades include a data link to augment/replace voice communications. The navigation capabilities include a fully integrated GPS and advanced flight management system. The surveillance capabilities include automatic aircraft position reporting (both enroute and oceanic).</p> <p>* NOTE: The FY99 Omnibus approved a \$13.5 million RDT&amp;E requirement, removed \$13.5 million from KC-10 GATM Procurement, and transferred \$9.5 million to RDT&amp;E. Congressional action transferred \$23.609 million in FY00 funds to RDT&amp;E. FY01 funds were transferred from procurement to accurately reflect the nature of the work being accomplished.</p> |   |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 1999 (\$ in Thousands)                     |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$3,780 System Engineering/Program Management |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$5,302 Kit Design/Development                |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$365 Mission Support                         |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$9,447 Total                                 |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | FY 2000 (\$ in Thousands)                     |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$4,287 System Engineering/Program Management |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$14,020 Kit Design/Development               |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,833 Prototype Fabrication                 |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$2,191 Mission Support                       |                     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)  | \$23,331 Total                                |                     |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                                       | DATE                      | February 2000 |
|--|---------------------------------------|---------------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                   | PROJECT                   |               |
| 07 - Operational System Development  | 0401219F KC-10S                       | 674496                    |               |
| (U) A. Mission Description Continued   |                                       |                           |               |
| (U) FY 2001 (\$ in Thousands)  |                                       |                           |               |
| (U) \$196  | System Engineering/Program Management |                           |               |
| (U) \$9,057  | Kit Design/Development                |                           |               |
| (U) \$8,492  | Prototype Fabrication/Install         |                           |               |
| (U) \$1,781  | Mission Support                       |                           |               |
| (U) \$19,526   | Total                                 |                           |               |
| (U) B. Budget Activity Justification   |                                       |                           |               |
| This effort is a low technical risk effort supporting a fielded weapon system and, therefore, is assigned to Budget Activity 7, Operational Systems Development.   |                                       |                           |               |
| (U) C. Program Change Summary (\$ in Thousands)  |                                       |                           |               |
| (U) Previous President's Budget (FY 2000 PBR)  |                                       | FY 1999                   | FY 2000       |
| (U) Appropriated Value   |                                       | 0                         | 0             |
| (U) Adjustments to Appropriated Value  |                                       | 0                         | 0             |
| a. Congressional/General Reductions  |                                       |                           | -150          |
| b. Small Business Innovative Research  |                                       |                           | -128          |
| c. Omnibus or Other Above Threshold Reprogram  |                                       | 9,500                     | 9,500         |
| d. Below Threshold Reprogram   |                                       |                           |               |
| e. Rescissions   |                                       | -53                       | -53           |
| f. Other   |                                       |                           | 23,609        |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |                                       |                           | 19,526        |
| (U) Current Budget Submit/FY 2001 PBR  |                                       | 9,447                     | 23,331        |
| (U) Significant Program Changes:   |                                       |                           | 19,526        |
| Funds were programmed under the 3010 appropriation in FY00 PB. Air Force determined that 3600 funds were appropriate for the NRE/Prototype of this modification. The FY99 Omnibus approved a \$13.5 million RDT&E requirement, removed \$13.5 million from KC-10 GATM Procurement, and transferred \$9.5 million to RDT&E. Congressional action transferred \$23.609 million in FY00 funds to RDT&E. FY01 funds were transferred from procurement to accurately reflect the nature of the work being accomplished. |                                       |                           |               |
| Project 674496   |                                       | Exhibit R-2 (PE 0401219F) |               |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                     |          |          |          |          |          |          |          | DATE       | February 2000 |
|---|--|---------------------|----------|----------|----------|----------|----------|----------|----------|------------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE |          |          |          | PROJECT  |          |          |          |            |               |
| 07 - Operational System Development                 |  | 0401219F KC-10S     |          |          |          | 674496   |          |          |          |            |               |
| (U)   | <u>D. Other Program Funding Summary (\$ in Thousands)</u>  |                     |          |          |          |          |          |          |          |            |               |
|   |  | FY 1999             | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to  | Total Cost |               |
|   |  | Actual              | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete |            |               |
| (U)   | AF RDT&E   | 595                 | 0        | 36,367   | 31,334   | 19,667   |          |          |          | 87,963     |               |
| (U)   | Other APPN   |                     |          |          |          |          |          |          |          |            |               |
| (U)   | PE#401219F / KC-10 Squadrons, Aircraft Procurement, AF, BA-5, KC-10 Mods, GATM, BP-II  |                     |          |          |          |          |          |          |          |            |               |
| (U)   | <u>E. Acquisition Strategy</u>   |                     |          |          |          |          |          |          |          |            |               |
|   | The acquisition strategy is to issue a cost plus award fee contract to the Original Equipment Manufacturer (OEM) for this effort. The contract is managed at the OC-ALC. |                     |          |          |          |          |          |          |          |            |               |
| (U)   | <u>F. Schedule Profile</u>   |                     |          |          |          |          |          |          |          |            |               |
|   |  |                     |          |          | FY 1999  |          | FY 2000  |          | FY 2001  |            |               |
|   |  |                     |          |          | 1 2 3    | 4        | 1 2 3    | 4        | 1 2 3    | 4          |               |
|   | Acquisition Strategy Plan (FY99/1)   |                     |          | *        |          |          |          |          |          |            |               |
|   | Contract Award   |                     |          |          |          |          | X        |          |          |            |               |
|   | Prototype Installation Starts  |                     |          |          |          |          |          |          | X        |            |               |
|   | First Flight   |                     |          |          |          |          |          |          |          |            |               |
|   | Developmental Test Start   |                     |          |          |          |          |          |          |          |            |               |
|   | Production Installation Start (FY03/1)   |                     |          |          |          |          |          |          |          |            |               |
|   | Production Installation Complete (FY04/1)  |                     |          |          |          |          |          |          |          |            |               |
|   | * - On-going activities  |                     |          |          |          |          |          |          |          |            | X             |
|   | X - Scheduled activities   |                     |          |          |          |          |          |          |          |            | X             |

Project 674496

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Exhibit R-2 (PE 0401219F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |                    |                   | DATE                | February 2000  | PROJECT                   |
|--|---|--------------------|-------------------|---------------------|----------------|---------------------------|
| BUDGET ACTIVITY                                    |   |                    |                   | PE NUMBER AND TITLE |                | 674496                    |
| 07 - Operational System Development                |   |                    |                   | 0401219F KC-10S     |                |                           |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |                    |                   |                     |                |                           |
|  |   |                    |                   | <u>FY 1999</u>      | <u>FY 2000</u> | <u>FY 2001</u>            |
| (U)  | System Engineering/Program Management   |                    |                   | 3,780               | 4,287          | 196                       |
| (U)  | Kit Design/Development  |                    |                   | 5,302               | 14,020         | 9,057                     |
| (U)  | Prototype Fabrication   |                    |                   |                     | 2,833          |                           |
| (U)  | Prototype Fabrication/Install   |                    |                   |                     |                | 8,492                     |
| (U)  | Mission Support   |                    |                   | 365                 | 2,191          | 1,781                     |
| (U)  | Total   |                    |                   | 9,447               | 23,331         | 19,526                    |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |                    |                   |                     |                |                           |
| (U)  | <u>Performing Organizations:</u>  |                    |                   |                     |                |                           |
|  | <u>Contractor or</u>  | <u>Contract</u>    | <u>Performing</u> | <u>Project</u>      | <u>Budget</u>  | <u>Total</u>              |
|  | <u>Government</u>   | <u>Method/Type</u> | <u>Activity</u>   | <u>Office</u>       | <u>FY 2000</u> | <u>Program</u>            |
|  | <u>Performing</u>   | <u>or Funding</u>  | <u>EAC</u>        | <u>EAC</u>          | <u>FY 1999</u> | <u>Complete</u>           |
|  | <u>Activity</u>   | <u>Vehicle</u>     | <u>TBD</u>        | <u>TBD</u>          | <u>FY 2001</u> | <u>Program</u>            |
|  | Boeing  | SS/CPAF            |                   |                     | 18,917         | 50,195                    |
|  |   |                    | Sep 99-Mar 01     | 0                   | 9,247          | 0                         |
|  | <u>Product Development Organizations</u>  |                    |                   |                     |                |                           |
|  | <u>Support and Management Organizations</u>                                     | <u>Award or</u>    | <u>Activity</u>   | <u>Total Prior</u>  | <u>Budget</u>  | <u>Budget to</u>          |
|  | EMC, Frontier, other support  | <u>Obigation</u>   | <u>EAC</u>        | <u>to FY 1999</u>   | <u>FY 2000</u> | <u>Complete</u>           |
|  | contractors   | <u>Date</u>        | <u>TBD</u>        |                     |                |                           |
|  | AF Mission Support System   | Sep 99-Mar 01      |                   | 200                 | 300            | 800                       |
|  | (AFMSS)   | Mar 00             |                   | 1,000               |                | 1,000                     |
|  | <u>Test and Evaluation Organizations</u>  |                    |                   |                     |                |                           |
|  | 418 Test Squadrn AFFTC  | Jan 01             |                   |                     | 309            | 309                       |
|  | (Edwards AFB)   |                    |                   |                     |                |                           |
| Project 674496                                     |   |                    |                   | Page 4 of 5 Pages   |                | Exhibit R-3 (PE 0401219F) |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |                          |               |                        |                |                |                |                    |               |
|--|---|--------------------------|---------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE      |               |                        |                | DATE           |                | PROJECT            |               |
| 07 - Operational System Development                |   | 0401219F KC-10S          |               |                        |                |                |                | February 2000      |               |
| (U) Government Furnished Property:                 |   |                          |               |                        |                |                |                |                    |               |
| Item Description                                   | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Delivery Date | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  |   |                          |               |                        |                |                |                |                    |               |
| Product Development Property                       |   |                          |               |                        |                |                |                |                    |               |
| TBD  |   |                          |               |                        |                |                |                |                    |               |
| Support and Management Property                    |   |                          |               |                        |                |                |                |                    |               |
| TBD  |   |                          |               |                        |                |                |                |                    |               |
| Test and Evaluation Property                       |   |                          |               |                        |                |                |                |                    |               |
| TBD  |   |                          |               |                        |                |                |                |                    |               |
| Subtotals  |   |                          |               |                        |                |                |                |                    |               |
|  |   |                          |               | Total Prior to FY 1999 | 0              | Budget FY 1999 | 9,247          | Budget FY 2000     | 22,031        |
|  |   |                          |               |                        |                |                | 18,917         | Budget to Complete | 0             |
|  |   |                          |               |                        |                |                |                |                    | Total Program |
|  |   |                          |               |                        |                |                |                |                    | 50,195        |
| Subtotal Product Development                       |   |                          |               |                        |                |                |                |                    |               |
|  |   |                          |               |                        |                | 200            | 1,300          | 300                | 1,800         |
| Subtotal Support and Management                    |   |                          |               |                        |                |                |                |                    |               |
|  |   |                          |               |                        |                |                | 309            |                    | 309           |
| Subtotal Test and Evaluation                       |   |                          |               |                        |                |                |                |                    |               |
|  |   |                          |               | 0                      | 9,447          | 23,331         | 19,526         | 0                  | 52,304        |
| Total Project                                      |   |                          |               |                        |                |                |                |                    |               |

Project 674496

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Exhibit R-3 (PE 0401219F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                            |                                      |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|----------------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |                            | PE NUMBER AND TITLE                  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |                            | 0404011F Special Operations Forces   |                  |                  |                  |                  |                  |                  |                  | 674860     |               |
|   | COST (\$ in Thousands)     | FY 1999 Actual                       | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674860  | Special Operations Forces  | 0                                    | 0                | 1,109            | 300              | 0                | 0                | 0                | 0                | 1,409      |               |
|   | Quantity of RDT&E Articles | 0                                    | 0                | 2                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b></p> <p>The aircrews require an enhanced capability to precisely locate and identify the modern day threats in order to meet mission requirements in a dense threat environment. Even without firing, threat systems can disrupt or negate operational missions by requiring aircrew reactions that affect mission objectives. Improved threat information from a modernized RWR will assist the aircrews in determining precise threat ranges/directions and provide option responses short of mission abort or violent aircraft maneuvering. Threat location refinements will help an enroute aircrew respond 'real-time' to previously unknown threats by providing sufficiently accurate information to allow the aircrews to reroute around hostile areas. This upgrade has been targeted for the AN/ALR-69 RWR system installed on all SOF aircraft. This upgrade effort will be designed/developed to provide improved situational awareness capability, improved reliability/maintainability, improved emitter ranging capability by factor of 100, improved angle accuracy, and increased ambiguity resolution by an order of magnitude. The present AN/ALR-69 RWR system is 1970's technology and has become increasingly difficult to maintain with the sustainment and capability issues.</p> |                            |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands)  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                        | No Activity                          |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                        | Total                                |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands)  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                        | No Activity                          |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$0                        | Total                                |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2001 (\$ in Thousands)  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$700                      | Hardware/Software Design/Development |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$300                      | Systems Engineering Support          |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$109                      | Program Office Support               |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,109                    | Total                                |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                                    | DATE                    | February 2000 |                           |
|---|------------------------------------|-------------------------|---------------|---------------------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE                | PROJECT                 |               |                           |
| 07 - Operational System Development                 | 0404011F Special Operations Forces | 674860                  |               |                           |
| (U) <u>F. Schedule Profile</u>                      |                                    |                         |               |                           |
|   |                                    | FY 1999                 | FY 2000       | FY 2001                   |
|   |                                    | 1 2 3 4 1 2 3 4 1 2 3 4 |               |                           |
| (U) Contract award                                  |                                    |                         |               | X                         |
| (U) Software Development complete                   |                                    |                         |               | X                         |
| (U) Hardware Development complete                   |                                    |                         |               | X                         |
| (U) Testing Begins                                  |                                    |                         |               | X                         |
| Project 674860                                      |                                    |                         |               |                           |
| Page 3 of 5 Pages                                   |                                    |                         |               | Exhibit R-2 (PE 0404011F) |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                           |             |            |            |         |                                    |         |                           |  |  |
|--|-------------|------------|------------|---------|------------------------------------|---------|---------------------------|--|--|
| BUDGET ACTIVITY  |             |            |            |         | DATE                               |         | PROJECT                   |  |  |
| 07 - Operational System Development  |             |            |            |         | 0404011F Special Operations Forces |         | 674860                    |  |  |
| (U) A. Project Cost Breakdown (\$ in Thousands)                              |             |            |            |         | FY 1999                            | FY 2000 | FY 2001                   |  |  |
| (U) Software/Hardware Design/Development                                     |             |            |            |         |                                    |         |                           |  |  |
| (U) Program Office Support   |             |            |            |         |                                    |         |                           |  |  |
| (U) System Engineering Support   |             |            |            |         |                                    |         |                           |  |  |
| (U) Total  |             |            |            |         |                                    |         |                           |  |  |
| (U) B. Budget Acquisition History and Planning Information (\$ in Thousands) |             |            |            |         |                                    |         |                           |  |  |
| (U) Performing Organizations:  |             |            |            |         |                                    |         |                           |  |  |
| Contract or  | Contract    |            |            |         |                                    |         |                           |  |  |
| Government   | Method/Type | Award or   | Performing | Project |                                    |         |                           |  |  |
| Performing   | or Funding  | Obligation | Activity   | Office  |                                    |         |                           |  |  |
| Activity   | Vehicle     | Date       | EAC        | EAC     |                                    |         |                           |  |  |
| Product Development Organizations  |             |            |            |         |                                    |         |                           |  |  |
| WR-ALC/LNRC  | TBD         | TBD        | TBD        | TBD     |                                    |         |                           |  |  |
| WR-ALC/LNRC  | TBD         | Nov 00     | TBD        | TBD     |                                    |         |                           |  |  |
| Support and Management Organizations   |             |            |            |         |                                    |         |                           |  |  |
| TBD  | Various     | Jun 01     | N/A        | N/A     |                                    |         |                           |  |  |
| Test and Evaluation Organizations  |             |            |            |         |                                    |         |                           |  |  |
| TBD  |             |            |            |         |                                    |         |                           |  |  |
| (U) Government Furnished Property:   |             |            |            |         |                                    |         |                           |  |  |
|  | Contract    |            |            |         |                                    |         |                           |  |  |
|  | Method/Type | Award or   |            |         |                                    |         |                           |  |  |
| Item   | or Funding  | Obligation | Delivery   |         |                                    |         |                           |  |  |
| Description  | Vehicle     | Date       | Date       |         |                                    |         |                           |  |  |
| Product Development Property   |             |            |            |         |                                    |         |                           |  |  |
| NONE   |             |            |            |         |                                    |         |                           |  |  |
| Support and Management Property  |             |            |            |         |                                    |         |                           |  |  |
| NONE   |             |            |            |         |                                    |         |                           |  |  |
| Project 674860   |             |            |            |         | Page 4 of 5 Pages                  |         | Exhibit R-3 (PE 0404011F) |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                    | DATE                   | February 2000  |
|--|------------------------------------|------------------------|----------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE                | PROJECT                |                |
| 07 - Operational System Development                | 0404011F Special Operations Forces | 674860                 |                |
| (U) Government Furnished Property Continued:       |                                    |                        |                |
| Test and Evaluation Property                       |                                    |                        |                |
| NONE   |                                    |                        |                |
| Subtotals  |                                    | Total Prior to FY 1999 | Budget FY 1999 |
| Subtotal Product Development                       |                                    | 0                      | 0              |
| Subtotal Support and Management                    |                                    | 0                      | 0              |
| Subtotal Test and Evaluation                       |                                    | 0                      | 0              |
| Total Project                                      |                                    | 0                      | 0              |
|  |                                    | Budget FY 2000         | Budget FY 2001 |
|  |                                    | 0                      | 1,000          |
|  |                                    | 0                      | 109            |
|  |                                    | 0                      | 0              |
|  |                                    | 0                      | 1,109          |
|  |                                    | Budget to Complete     | Total Program  |
|  |                                    | 300                    | 1,300          |
|  |                                    | 0                      | 109            |
|  |                                    | 0                      | 0              |
|  |                                    | 300                    | 1,409          |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |                                     |                                     |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|-------------------------------------|-------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |                                     | PE NUMBER AND TITLE                 |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development   |                                     | 0702207F Depot Maintenance (Non-IF) |                  |                  |                  |                  |                  |                  |                  | 673326     |               |
|   | COST (\$ in Thousands)              | FY 1999 Actual                      | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 673326  | Precision Measurement & Calibration | 1,438                               | 4,744            | 1,515            | 1,533            | 1,558            | 1,587            | 1,613            | Continuing       | TBD        |               |
|   | Quantity of RDT&E Articles          | 0                                   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| <p>(U) <b>A. Mission Description</b></p> <p>This program develops, tests, and evaluates national and Air Force measurement standards (hardware) and calibration equipment in support of all Air Force programs and activities, including 113 Precision Measurement Equipment Laboratories (PMELs) worldwide. Metrology research and development provides technology to support systems in all phases of development and acquisition, as well as Air Force R&amp;D laboratories, test ranges, ground test facilities, and operational weapons systems support. Rapidly changing technology requires continuing research and development of measurement standards and calibration equipment to ensure modern weapon systems meet Air Force readiness objectives. This program addresses all metrology disciplines and includes the technology areas of laser, infrared, microwave, millimeter wave, optical, physical, mechanical, electrical, electronic, and ionizing radiation measurements. Metrology is a technical discipline devoted to the science of measurements and to the study and improvement of measurement technology. Measurements are the foundation of military system development, quality assurance, hardware conformance testing and system readiness tests. The integrity of these tests is assured through calibration and traceability assurance schemes. The capability to measure and calibrate must parallel the emergence of new technologies, new ranges, and new capabilities of military systems. Lack of new measurement capability impedes or blocks the successful exploitation of new technologies, especially in the movement from development laboratory to production to deployment. R&amp;D efforts are essential within the DoD to pace these requirements, otherwise, these same new systems will suffer time delays, excessive cost, and increased risk due to unreliable test results in all phases of development, production, deployment and operation.</p> <p>(U) <b>FY 1999 (\$ in Thousands)</b></p> <p>(U) \$680 Completed the development of an enhanced electrical substitution radiometer, tunable lasers for radiometry and detector standards for long wavelength infrared measurements; began the tunable diode fiber laser for optic metrology and radiance response with uniform sources projects; and continued development of other national measurements standards to support Air Force infrared / laser/electro-optical weapon system and support equipment.</p> <p>(U) \$175 Completed noise figure measurement project and continued development of standards for radar support, RF communications systems, and radar cross-section range measurements.</p> <p>(U) \$195 Completed development of methods to characterize micro-electromechanical sensors (MEMS), began development of methods to characterize bench top wind tunnels, and continued development of improved calibration support for coordinate measuring machines (CMMs).</p> <p>(U) \$313 Completed the fast electrical pulse project, began development of improved thin film multi junction thermal converters and continued development of standards for electrical measurements to support high accuracy electronic test equipment.</p> |                                     |                                     |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 673326

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Exhibit R-2 (PE 0702207F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |                           | DATE                 | PROJECT       |
|---|--|---------------------------|----------------------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE  |                           |                      |               |
| <b>07 - Operational System Development</b>          | <b>0702207F Depot Maintenance (Non-IF)</b>   |                           | <b>February 2000</b> | <b>673326</b> |
| (U) <b>A. Mission Description Continued</b>         |  |                           |                      |               |
| (U) <b>FY 1999 (\$ in Thousands) Continued</b>      |  |                           |                      |               |
| (U) \$75  | Completed the beta measurement traceability project, continued the large area alpha radiation source metrology project and the development of national standards for calibration of ionizing radiation hazard instrumentation.   |                           |                      |               |
| (U) \$1,438   | Total  |                           |                      |               |
| (U) <b>FY 2000 (\$ in Thousands)</b>                |  |                           |                      |               |
| (U) \$1,735   | Complete the development of an improved blackbody calibrator and the tunable diode lasers for fiber optic metrology projects; begin projects to develop a target simulator radiometer, an improved avalanche photo diode and a domain engineered pyroelectric detector; and continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment. |                           |                      |               |
| (U) \$1,024   | Complete the development of the microwave high power system; begin projects to develop a full scale co-conical field generation system and a direct comparison power calibration system for 2.4mm, 2.92mm and 3.5mm connectors; and continue development of standards for radar support, RF communications systems, and radar cross-section range measurements.  |                           |                      |               |
| (U) \$760   | Complete methods to characterize bench top wind tunnels, and continue the development of improved calibration support for coordinate measuring machines (CMMs) and standards to support physical, mechanical and electro-mechanical support equipment.   |                           |                      |               |
| (U) \$455   | Complete the next generation sampling comparator probe project; begin to develop methods to characterize enhanced wide band oscilloscopes and precision wide band measurement systems; and continue development of standards for electrical measurements to support high accuracy electronic test equipment.   |                           |                      |               |
| (U) \$135   | Complete the large area alpha radiation source metrology project, begin the low level dosimetry traceability project and continue the development of national standards for calibration of ionizing radiation hazard instrumentation.  |                           |                      |               |
| (U) \$635   | Begin to develop methods to automate metrology processes.  |                           |                      |               |
| (U) \$4,744   | Total  |                           |                      |               |
| (U) <b>FY 2001 (\$ in Thousands)</b>                |  |                           |                      |               |
| (U) \$680   | Continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.   |                           |                      |               |
| (U) \$260   | Begin to develop WG 50-110 wave guide standards and continue development of standards for radar support, RF communications systems, and radar cross-section range measurements.  |                           |                      |               |
| (U) \$130   | Complete development of improved calibration support for coordinate measuring machines (CMMs), and continue development of standards to support physical, mechanical and electro-mechanical support equipment.   |                           |                      |               |
| (U) \$350   | Complete the Hall effect resistance standard project, the frequency response characteristics of capacitors projects and the improved thin film   |                           |                      |               |
| Project 673326                                      |  | Page 2 of 5 Pages         |                      |               |
|   |  | Exhibit R-2 (PE 0702207F) |                      |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)    |   |                           | DATE    | February 2000 |
|--|---|---------------------------|---------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE   | PROJECT                   |         |               |
| <b>07 - Operational System Development</b>             | <b>0702207F Depot Maintenance (Non-IF)</b>  | <b>673326</b>             |         |               |
| (U) <b>A. Mission Description Continued</b>            |   |                           |         |               |
| (U) <b>FY 2001 (\$ in Thousands) Continued</b>         |   |                           |         |               |
|  | multi junction thermoconverter project; and continue development of standards for electrical measurements to support high accuracy electronic test equipment.   |                           |         |               |
| (U) \$95   | Complete the large area beta source project and continue the development of national standards for calibration of ionizing radiation hazard instrumentation.  |                           |         |               |
| (U) \$1,515  | Total   |                           |         |               |
| (U) <b>B. Budget Activity Justification</b>            |   |                           |         |               |
|  | This program is in budget activity 7 - Operational System Development because it supports operational systems.  |                           |         |               |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b> |   |                           |         |               |
| (U) Previous President's Budget (FY 2000 PBR)          |   | FY 1999                   | FY 2000 | FY 2001       |
| (U) Appropriated Value                                 |   | 1,496                     | 1,500   | 1,529         |
| (U) Adjustments to Appropriated Value                  |   | 1,500                     | 4,800   |               |
| a. Congressional/General Reductions                    |   | -4                        |         |               |
| b. Small Business Innovative Research                  |   | -50                       |         |               |
| c. Omnibus or Other Above Threshold Reprogram          |   |                           | -26     |               |
| d. Below Threshold Reprogram                           |   |                           |         |               |
| e. Rescissions   |   | -8                        | -30     |               |
| f. Other   |   |                           |         |               |
| (U) Adjustments to Budget Years Since FY 2000 PBR      |   |                           |         |               |
| (U) Current Budget Submit/FY 2001 PBR                  |   | 1,438                     | 4,744   | -14           |
| (U) <b>Significant Program Changes:</b>                |   |                           |         |               |
|  | The additional funding in FY00 is to expedite the completion of several metrology projects such as to: develop the microwave high power system; develop a full scale co-conical field generation capability; improve blackbody calibration; develop target simulator radiometer; develop direct comparison power calibration system; and develop methods to characterize bench top wind tunnels. It will also be used to address requirements in areas such as automated metrology that could not be funded at previous levels. |                           |         |               |
| Project 673326   |   | Page 3 of 5 Pages         |         |               |
|  |   | Exhibit R-2 (PE 0702207F) |         |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |   |                  |                  |                  |                  |                  |                  |            | DATE    | February 2000 |
|---|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |            | PROJECT |               |
| 07 - Operational System Development                 |   | 0702207F Depot Maintenance (Non-IF)   |                  |                  |                  |                  |                  |                  |            | 673326  |               |
| (U)   | <u>D. Other Program Funding Summary (\$ in Thousands)</u> |   |                  |                  |                  |                  |                  |                  |            |         |               |
|   | FY 1999 Actual  | FY 2000 Estimate  | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |         |               |
| (U)   | AF RDT&E  |   |                  |                  |                  |                  |                  |                  |            |         |               |
| (U)   | Other APPN  |   |                  |                  |                  |                  |                  |                  |            |         |               |
| (U)   | <u>E. Acquisition Strategy</u>                            | Primarily accomplish through intergovernmental transfer between the Department of Defense and other Federal Departments. Secondly, accomplish through various funding vehicles. |                  |                  |                  |                  |                  |                  |            |         |               |
| (U)   | <u>F. Schedule Profile</u>                                |   |                  |                  |                  |                  |                  |                  |            |         |               |
|   |   | 1   | 2                | 3                | 4                | 1                | 2                | 3                | 4          |         |               |
|   |   |   |                  |                  |                  |                  |                  |                  |            |         |               |
| (U)   | N/A   |   |                  |                  |                  |                  |                  |                  |            |         |               |

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |  |                                 |                                |                           |                               |                       |                       |                       | DATE                 | February 2000 |
|--|---|--|---------------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------|-----------------------|-----------------------|----------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                            |                                 |                                |                           |                               |                       | PROJECT               |                       |                      |               |
| 07 - Operational System Development                |   | 0702207F Depot Maintenance (Non-IF)            |                                 |                                |                           |                               |                       | 673326                |                       |                      |               |
| (U)  | <u>A. Project Cost Breakdown (\$ in Thousands)</u>                              |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
| (U)  | Quality Assurance (Develop Measurement Standards & Calibration Support)         |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
| (U)  | Travel  |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
| (U)  | Total   |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  |   |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
| (U)  | <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
| (U)  | <u>Performing Organizations:</u>  |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  | <u>Contractor or Government Performing Activity</u>                             | <u>Contract Method/Type or Funding Vehicle</u> | <u>Award or Obligation Date</u> | <u>Performing Activity EAC</u> | <u>Project Office EAC</u> | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u> | <u>Budget FY 2001</u> | <u>Total Program</u> |               |
|  | <u>Product Development Organizations</u>  |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  | National Institute of Standards & Technology                                    | MIPR (DD FORM 448)                             | Varies                          | TBD                            | TBD                       | 13,629                        | 1,351                 | 3,820                 | 1,485                 | TBD                  |               |
|  | Department of Energy  | MIPR (DD FORM 448)                             | Varies                          | TBD                            | TBD                       |                               | 59                    | 260                   |                       | TBD                  |               |
|  | Technical Support Contracts   | Various  | Varies                          | TBD                            | TBD                       |                               |                       | 635                   |                       | TBD                  |               |
|  | AFMC  | In House                                       | Varies                          | TBD                            | TBD                       | 145                           | 28                    | 29                    | 30                    | TBD                  |               |
|  | <u>Support and Management Organizations</u>                                     |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  | <u>Test and Evaluation Organizations</u>  |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  | <u>Subtotals</u>  |  |                                 |                                |                           | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u> | <u>Budget FY 2001</u> | <u>Total Program</u> |               |
|  | Subtotal Product Development  |  |                                 |                                |                           | 13,774                        | 1,438                 | 4,744                 | 1,515                 | TBD                  |               |
|  | Subtotal Support and Management   |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  | Subtotal Test and Evaluation  |  |                                 |                                |                           |                               |                       |                       |                       |                      |               |
|  | Total Project   |  |                                 |                                |                           | 13,774                        | 1,438                 | 4,744                 | 1,515                 | TBD                  |               |

Project 673326

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Exhibit R-3 (PE 0702207F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |   | 0708011F Industrial Preparedness  |                  |                  |                  |                  |                  |                  |                  | 672865     |               |
|   | COST (\$ in Thousands)  | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 672865  | Manufacturing Technology  | 50,597  | 51,988           | 53,082           | 53,600           | 54,193           | 55,369           | 56,279           | Continuing       | TBD        |               |
|   | Quantity of RDT&E Articles  | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| (U)   | <b>A. Mission Description</b><br>The Manufacturing Technology (ManTech) program is a corporate Air Force program that establishes and demonstrates advancements in manufacturing process technologies, manufacturing engineering systems, and industrial practices, and transitions these advancements into weapon systems design, development, acquisition, and/or sustainment. ManTech provides cost reduction processes and practices and new manufacturing capabilities applicable to existing as well as new weapon systems under development. ManTech strives to make superior mission enabling technologies an affordable life cycle reality by expanding access to a capable, responsible, multi-use industrial base with efficiencies comparable to world class enterprises. Program efforts accelerate shop floor manufacturing process maturation, at every stage of development, through increased emphasis on cost, time, and quality risks in transition. Best processes are evaluated and adapted for application. Where mature processes are not available, laboratory-developed initial process capabilities are matured and inserted into weapon system programs. ManTech goes beyond just factory floor manufacturing/repair processes and encompasses every activity within an industrial enterprise, ranging from above the shop floor activities, including tools for integrated product process development (IPPD), to supplier base interactions and performance. The strategies and best practices of world-class enterprises are analyzed and the performance of defense suppliers benchmarked. The world's best industrial practices are adapted and validated in multiple pilot projects and deployed in defense applications. Project efforts address and target all industry levels, from large prime contractors to small material and parts vendors. Program efforts also enhance repair/remanufacture capabilities to affordably sustain the aging weapon systems inventory, thereby reducing total ownership costs. |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands)   | Established and demonstrated cost-effective and efficient manufacturing technologies for critical, high quality, reliable structural, propulsion, and electronic components and assemblies required for existing and next generation aircraft. Conducted pilot efforts in high-payoff endeavors aimed at validating potential benefits from flexible manufacturing, commercial/military integration, quality processing, and supplier improvements. Conducted long-term projects focused on IPPD tools. |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$28,525  | Established and demonstrated cost-effective repair and manufacturing technologies to affordably sustain existing weapon systems and to enhance mission readiness. Reduced repair and maintenance cycle time for aging systems and established remanufacturing capabilities able to rapidly generate standardized replacement parts on demand.   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$16,107  | Established and demonstrated efficient and cost-effective manufacturing methods for high performance, high reliability electronics, lightweight structures, and efficient propulsion methods for advanced tactical missiles. Established manufacturing improvements required to transition precision-guided munitions subsystems into production. Conducted pilot efforts in high-payoff endeavors aimed at validating potential benefits   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,445   |   |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 672865

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Exhibit R-2 (PE 0708011F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |         | DATE                      | February 2000 |
|---|---|---------|---------------------------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE   | PROJECT |                           |               |
| 07 - Operational System Development                 | 0708011F Industrial Preparedness  | 672865  |                           |               |
| (U) A. Mission Description Continued                |   |         |                           |               |
| (U) FY 1999 (\$ in Thousands) Continued             |   |         |                           |               |
| (U) \$4,520   | accrued from inserting best practices in production of weapon systems.<br>Established and demonstrated affordable, flexible manufacturing processes to reduce the cost and lead time of higher performance spacecraft and launch vehicles. Established effective and efficient manufacturing technology for critical high quality, reliable electronic components and assemblies required for surveillance, tracking communications links, and data/signal processing. Conducted pilot efforts in high-payoff endeavors aimed at providing efficient, low-cost capability to produce components and weapon systems in the space, launch, and Command, Control, Communications, and Intelligence (C3I) industrial base sectors.                  |         |                           |               |
| (U) \$50,597  | Total   |         |                           |               |
| (U) FY 2000 (\$ in Thousands)                       |   |         |                           |               |
| (U) \$20,225  | Establish and demonstrate cost-effective and efficient manufacturing technologies for critical, high quality, reliable structural, propulsion, and electronic components and assemblies required for existing and next generation aircraft. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from flexible manufacturing, commercial/military integration, quality processing, and supplier improvements. Conduct long-term projects focused on integrated product process development (IPPD) tools. Efforts include Phase II of the Forging Supplier Initiative and continuance of the Composites Affordability Initiative, aimed at providing 50% cost reduction in fighter aircraft structures. |         |                           |               |
| (U) \$22,799  | Establish and demonstrate cost-effective repair and manufacturing technologies for affordable sustainment of existing weapon systems and to enhance mission readiness. Reduce repair and maintenance cycle time for aging systems and establish remanufacturing capabilities which will rapidly generate standardized replacement parts on demand. Establish process improvements for repair/remanufacture of large area structures on legacy aircraft.   |         |                           |               |
| (U) \$1,515   | Establish and demonstrate efficient and cost-effective manufacturing methods for high performance, high reliability electronics, lightweight structures, and efficient propulsion methods for advanced tactical missiles. Establish manufacturing improvements required to transition precision-guided munition subsystems into production. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from inserting best practices in the production of weapon systems.  |         |                           |               |
| (U) \$6,949   | Establish and demonstrate affordable, flexible manufacturing processes to reduce the cost and lead time of higher performance spacecraft and launch vehicles. Establish effective and efficient manufacturing technology for critical high quality, reliable electronic component and assemblies required for surveillance, tracking communications links, and data/signal processing. Conduct pilot efforts in high-payoff endeavors aimed at providing efficient, low-cost capability to produce components and weapon systems in the space, launch, and Command, Control, Communications, and Intelligence (C3I) industrial base sectors. Initiate effort to rapidly respond to space sector manufacturing issues.                           |         |                           |               |
| (U) \$500   | Start and complete nickel metal-hydride replacement battery effort.   |         |                           |               |
| Project 672865                                      |   |         | Page 2 of 6 Pages         |               |
|   |   |         | Exhibit R-2 (PE 0708011F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |  | DATE                                    | PROJECT                               |
|--|--|---|---------------------------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  |   |                                       |
| <b>07 - Operational System Development</b>   |  | <b>0708011F Industrial Preparedness</b> | <b>February 2000</b><br><b>672865</b> |
| (U) <b>A. Mission Description Continued</b>  |  |   |                                       |
| (U) <b>FY 2000 (\$ in Thousands) Continued</b>   |  |   |                                       |
| (U) \$51,988   | Total  |   |                                       |
| (U) <b>FY 2001 (\$ in Thousands)</b>   |  |   |                                       |
| (U) \$19,402   | Establish and demonstrate cost-effective and efficient manufacturing technologies for critical, high quality, reliable structural, propulsion, and electronic components and assemblies required for existing and next generation aircraft. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from flexible manufacturing, commercial/military integration, quality processing, and supplier improvements. Conduct long-term projects focused on integrated product process development (IPPD) tools. Initiate effort to catalog and implement lean concepts. Start activity focused on modeling and simulation techniques for manufacturing enterprises.                  |   |                                       |
| (U) \$21,855   | Establish and demonstrate cost-effective repair and maintenance cycle time for aging systems and establish remanufacturing capabilities which will enhance mission readiness. Reduce repair and maintenance parts on demand. Initiate effort to address technologies for turbine engine life extension.  |   |                                       |
| (U) \$1,315  | Establish and demonstrate efficient and cost-effective manufacturing methods for high performance, high reliability electronics, lightweight structures, and efficient propulsion methods for advanced tactical missiles. Establish manufacturing improvements required to transition precision guided munition subsystems into production. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from inserting best practices in the production of weapon systems. Initiate project to establish affordable manufacturing processes for microelectronic machined structures (MEMS) applied to inertial measurement units.  |   |                                       |
| (U) \$10,510   | Establish and demonstrate affordable, flexible manufacturing processes to reduce the cost and lead time of higher performance spacecraft and launch vehicles. Establish effective and efficient manufacturing technology for critical high quality, reliable electronic component and assemblies required for surveillance, tracking communications links, and data/signal processing. Conduct pilot efforts in high-payoff endeavors aimed at providing efficient, low-cost capability to produce components and weapon systems in the space, launch, and Command, Control, Communications, and Intelligence (C3I) industrial base sectors. Continue efforts to rapidly respond to space sector manufacturing issues. |   |                                       |
| (U) \$53,082   | Total  |   |                                       |
| (U) <b>B. Budget Activity Justification</b>  |  |   |                                       |
| This program is in Budget Activity 7, Operational System Development, because it provides support to systems in production and/or operational use. |  |   |                                       |

## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                                  |          |          | DATE       | February 2000 | PROJECT  |          |          |            |
|---|---|----------------------------------|----------|----------|------------|---------------|----------|----------|----------|------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE              |          |          | 672865     |               |          |          |          |            |
| 07 - Operational System Development                 |   | 0708011F Industrial Preparedness |          |          | 672865     |               |          |          |          |            |
| (U)   | C. Program Change Summary (\$ in Thousands)   | FY 1999                          | FY 2000  | FY 2001  | Total Cost |               |          |          |          |            |
| (U)   | Previous President's Budget (FY 2000 PBR)   | 52,351                           | 51,814   | 53,480   |            |               |          |          |          |            |
| (U)   | Appropriated Value  | 52,997                           | 52,314   |          |            |               |          |          |          |            |
| (U)   | Adjustments to Appropriated Value   |                                  |          |          |            |               |          |          |          |            |
|   | a. Congressional/General Reductions   | -646                             | -40      |          |            |               |          |          |          |            |
|   | b. Small Business Innovative Research   | -1,396                           |          |          |            |               |          |          |          |            |
|   | c. Omnibus or Other Above Threshold Reprogram   |                                  | -286     |          |            |               |          |          |          |            |
|   | d. Below Threshold Reprogram  | -70                              |          |          |            |               |          |          |          |            |
|   | e. Rescissions  | -288                             |          |          |            |               |          |          |          |            |
|   | f. Other  |                                  |          |          | TBD        |               |          |          |          |            |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |                                  |          | -398     |            |               |          |          |          |            |
| (U)   | Current Budget Submit/FY 2001 PBR   | 50,597                           | 51,988   | 53,082   | TBD        |               |          |          |          |            |
| (U)   | Significant Program Changes:  |                                  |          |          |            |               |          |          |          |            |
|   | Not Applicable.   |                                  |          |          |            |               |          |          |          |            |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  | FY 1999                          | FY 2000  | FY 2001  | FY 2002    | FY 2003       | FY 2004  | FY 2005  | Cost to  | Total Cost |
|   |   | Actual                           | Estimate | Estimate | Estimate   | Estimate      | Estimate | Estimate | Complete |            |
| (U)   | AF RDT&E  |                                  |          |          |            |               |          |          |          |            |
| (U)   | Other APPN  |                                  |          |          |            |               |          |          |          |            |
|   | Not Applicable.   |                                  |          |          |            |               |          |          |          |            |
| (U)   | E. Acquisition Strategy   |                                  |          |          |            |               |          |          |          |            |
|   | All major contracts in this Program Element were awarded after full and open competition. |                                  |          |          |            |               |          |          |          |            |
| (U)   | F. Schedule Profile   |                                  |          |          |            |               |          |          |          |            |
|   |   |                                  |          |          |            |               |          |          |          |            |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                         |                    |                        |                |                |                | DATE               | February 2000 |
|--|---|---|--------------------------|-------------------------|--------------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                     |                          | PROJECT                 |                    |                        |                |                |                |                    |               |
| 07 - Operational System Development                |   | 0708011F Industrial Preparedness        |                          | 672865                  |                    |                        |                |                |                |                    |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          |                         |                    |                        |                |                |                |                    |               |
| (U)  | Manufacturing technologies for aircraft components                              | FY 1999                                 | FY 2000                  | FY 2001                 |                    |                        |                |                |                |                    |               |
| (U)  | Repair/remanufacture technologies for weapon system sustainment                 | 28,525                                  | 20,225                   | 19,402                  |                    |                        |                |                |                |                    |               |
| (U)  | Manufacturing methods for missile and munition assemblies                       | 16,107                                  | 22,799                   | 21,855                  |                    |                        |                |                |                |                    |               |
| (U)  | Manufacturing processes to reduce spacecraft and launch vehicle costs           | 1,445                                   | 1,515                    | 1,315                   |                    |                        |                |                |                |                    |               |
| (U)  | Nickel Metal-Hydride Replacement Battery effort                                 | 4,520                                   | 6,949                    | 10,510                  |                    |                        |                |                |                |                    |               |
| (U)  | Total   | 0                                       | 500                      | 0                       |                    |                        |                |                |                |                    |               |
| (U)  |   | 50,597                                  | 51,988                   | 53,082                  |                    |                        |                |                |                |                    |               |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                         |                    |                        |                |                |                |                    |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |                    |                        |                |                |                |                    |               |
|  | Contractor or Government Performing Activity                                    | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
|  | <b>Product Development Organizations</b>  |   |                          |                         |                    |                        |                |                |                |                    |               |
|  | Numerous  | Various                                 | Various                  | N/A                     | N/A                | 28,280                 | 26,353         | 23,837         | Continuing     | TBD                |               |
|  | Howmet  | Cost Share                              | Jul 95                   | N/A                     | N/A                | 4,000                  | 3,000          | 3,500          | 500            | 22,250             |               |
|  | Ontek   | CPFF                                    | Jan 95                   | N/A                     | N/A                | 1,452                  | 0              | 0              | 0              | 6,900              |               |
|  | Composites Affordability Initiative (Consortium)                                | CA                                      | Aug 97                   | N/A                     | N/A                | 13,055                 | 4,070          | 3,300          | 0              | 26,315             |               |
|  | Sustainment Initiative  | Various                                 | Various                  | N/A                     | N/A                | 0                      | 5,120          | 6,820          | 13,939         | 28,309             |               |
|  | Engine Forging Initiative   | Various                                 | May 99                   | N/A                     | N/A                | 0                      | 2,300          | 3,000          | 2,500          | 9,000              |               |
|  | Parts Obsolescence Initiative   | Various                                 | Various                  | N/A                     | N/A                | 0                      | 4,995          | 5,375          | 6,107          | 19,597             |               |
|  | Small/Medium Supplier Initiative  | Various                                 | Various                  | N/A                     | N/A                | 0                      | 1,800          | 2,000          | 5,527          | 9,627              |               |
|  | ManTech for Affordable Spacecraft   | Various                                 | Various                  | N/A                     | N/A                | 0                      | 1,875          | 2,350          | 4,265          | 12,140             |               |
|  | Laser Shock Peening, Inc  | CS                                      | Aug 98                   | N/A                     | N/A                | 350                    | 1,350          | 1,750          | 0              | 5,050              |               |
|  | Coherent Technology, Inc  | CS                                      | Jun 97                   | N/A                     | N/A                | 1,400                  | 700            | 250            | 0              | 2,350              |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                                  |                | DATE           | February 2000      |
|--|----------------------------------|----------------|----------------|--------------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE              |                |                | PROJECT            |
| 07 - Operational System Development                | 0708011F Industrial Preparedness |                |                | 672865             |
| (U) <u>Performing Organizations Continued:</u>     |                                  |                |                |                    |
| Support and Management Organizations               |                                  |                |                |                    |
| In house support                                   |                                  |                |                |                    |
| <u>Test and Evaluation Organizations</u>           |                                  |                |                |                    |
| <u>Subtotals</u>                                   |                                  |                |                |                    |
| Subtotal Product Development                       | Total Prior to FY 1999           | Budget FY 1999 | Budget FY 2000 | Budget to Complete |
| Subtotal Support and Management                    | 31,503                           | 50,597         | 51,988         | TBD                |
| Subtotal Test and Evaluation                       |                                  |                |                |                    |
| Total Project                                      | 31,503                           | 50,597         | 51,988         | TBD                |

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Exhibit R-3 (PE 0708011F)

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## UNCLASSIFIED

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |   |  |  |  |  |  |  |  | DATE    | February 2000 |
|---|--|---|--|--|--|--|--|--|--|---------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE   |  |  |  |  |  |  |  | PROJECT |               |
| 07 - Operational System Development                 |  | 0708026F Productivity, Reliability, Availability, Maintainability, Availability, Reliability, Availability, Maintainability Program |  |  |  |  |  |  |  | 672146  |               |
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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)    |  | DATE          | PROJECT                   |
|--|--|---------------|---------------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE  |               |                           |
| 07 - Operational System Development                    | 0708026F Productivity, Reliability, Availability, Maintainability Program  | February 2000 | 672146                    |
| (U) <u>A. Mission Description Continued</u>            |  |               |                           |
| (U) FY 2000 (\$ in Thousands) Continued                | programmable circuit card project that will provide the ability to create a replacement of failed circuit cards wherever needed for most applications.   |               |                           |
| (U) \$6,000  | Start and complete tasks on Lean Blade Repair at Oklahoma City Air Logistics Center.   |               |                           |
| (U) \$7,000  | Start and complete additional tasks on Aging Landing Gear Life Extension.  |               |                           |
| (U) \$562  | Continue high priority, quick response R&M projects identified by the operational commands to reduce maintenance downtime.   |               |                           |
| (U) \$22,075   | Total  |               |                           |
| (U) FY 2001 (\$ in Thousands)                          |  |               |                           |
| (U) \$5,762  | Continue work in subsystem R&M projects that will reduce the overall maintenance burden, improve subsystem capabilities and reliability, and improve mission readiness. Initiate Engine Oil Analysis project to improve fighter aircraft engine maintainability. |               |                           |
| (U) \$2,000  | Continue airframe R&M efforts to reduce overall Air Force operations and support costs.  |               |                           |
| (U) \$3,890  | Continue efforts in support equipment and base infrastructure R&M to reduce maintenance costs and increase equipment availability. A potential effort involves upgrading a circuit board tester to make the system fully supportable for the next 10-15 years.   |               |                           |
| (U) \$3,000  | Initiate R&M efforts that directly support military space and missile systems, including replacing the Constellation Control System to reduce operations and sustainment costs.  |               |                           |
| (U) \$575  | Continue high priority, quick response R&M projects identified by the operational commands to reduce maintenance downtime.   |               |                           |
| (U) \$15,227   | Total  |               |                           |
| (U) <u>B. Budget Activity Justification</u>            |  |               |                           |
|  | This program is in Budget Activity 7, Operational System Development, because it provides support to systems in operational use.   |               |                           |
| (U) <u>C. Program Change Summary (\$ in Thousands)</u> |  |               |                           |
| (U) Previous President's Budget (FY 2000 PBR)          |  | FY 1999       | FY 2000                   |
| (U) Appropriated Value                                 |  | 10,440        | 9,382                     |
| (U) Adjustments to Appropriated Value                  |  | 10,470        | 22,382                    |
| a. Congressional/General Reductions                    |  | -30           |                           |
| b. Small Business Innovative Research                  |  | -296          |                           |
| c. Omnibus or Other Above Threshold Reprogram          |  |               | -121                      |
| Project 672146   |  |               |                           |
|  | Page 2 of 5 Pages  |               | Exhibit R-2 (PE 0708026F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)          |  |  |  |  |   |  |               |  |  |
|--|--|--|--|--|---|--|---------------|--|--|
| BUDGET ACTIVITY  |  |  |  |  | DATE  |  | February 2000 |  |  |
| 07 - Operational System Development                          |  |  |  |  | PE NUMBER AND TITLE   |  | PROJECT       |  |  |
|  |  |  |  |  | 0708026F Productivity, Reliability, Availability, Maintainability Program |  | 672146        |  |  |
| <b>C. Program Change Summary (\$ in Thousands) Continued</b> |  |  |  |  |   |  |               |  |  |
| (U)  | d. Below Threshold Reprogram   |  |  |  |   |  |               |  |  |
|  | e. Rescissions   |  |  |  |   |  |               |  |  |
|  | f. Other   |  |  |  |   |  |               |  |  |
| (U)  | Adjustments to Budget Years Since FY 2000 PBR  |  |  |  |   |  |               |  |  |
| (U)  | Current Budget Submit/FY 2001 PBR  |  |  |  |   |  |               |  |  |
| (U)  | Significant Program Changes:   |  |  |  |   |  |               |  |  |
|  | FY 2001 funding decrease due to higher priority Air Force requirements.  |  |  |  |   |  |               |  |  |
| <b>D. Other Program Funding Summary (\$ in Thousands)</b>    |  |  |  |  |   |  |               |  |  |
| (U)  |  |  |  |  |   |  |               |  |  |
|  | AF RDT&E   |  |  |  |   |  |               |  |  |
| (U)  | Other APPN   |  |  |  |   |  |               |  |  |
|  | (U) Related Activities:  |  |  |  |   |  |               |  |  |
|  | (U) PE 0605011F, RDT&E for Aging Aircraft.   |  |  |  |   |  |               |  |  |
| <b>E. Acquisition Strategy</b>                               |  |  |  |  |   |  |               |  |  |
|  | All projects within this Program Element are awarded competitively, either by full and open competition or by amending task order contracts with competition for subcontracts. |  |  |  |   |  |               |  |  |
| <b>F. Schedule Profile</b>                                   |  |  |  |  |   |  |               |  |  |
| (U)  |  |  |  |  |   |  |               |  |  |
|  | Blade Repair Contract Award  |  |  |  |   |  |               |  |  |
| (U)  | Request For Proposal Release   |  |  |  |   |  |               |  |  |
| (U)  | Contract Awards  |  |  |  |   |  |               |  |  |

Project 672146

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          | DATE                    | February 2000      | PROJECT                |
|--|---|---|--------------------------|-------------------------|--------------------|------------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE   |                          |                         |                    |                        |
| 07 - Operational System Development                |   | 0708026F Productivity, Reliability, Availability, Maintainability Program |                          |                         |                    |                        |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>                              |   |                          | FY 1999                 | FY 2000            | FY 2001                |
| (U)  | Blade Tip Repair Project  |   |                          | 5,470                   | 6,000              | 0                      |
| (U)  | Subsystem Reliability & Maintainability (R&M)                                   |   |                          | 0                       | 6,500              | 5,762                  |
| (U)  | Aero Support Equipment and Base Infrastructure R&M                              |   |                          | 0                       | 1,550              | 3,890                  |
| (U)  | Airframe R&M  |   |                          | 303                     | 463                | 2,000                  |
| (U)  | Space Systems R&M   |   |                          | 204                     | 0                  | 3,000                  |
| (U)  | Quick Response  |   |                          | 89                      | 562                | 575                    |
| (U)  | Aging Landing Gear Life Extension   |   |                          | 3,974                   | 7,000              | 0                      |
| (U)  | Total   |   |                          | 10,040                  | 22,075             | 15,227                 |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b> |   |                          |                         |                    |                        |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                         |                    |                        |
|  | Contractor or Government Performing Activity                                    | Contract Method/Type or Funding Vehicle                                   | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 |
| <b>Product Development Organizations</b>           |   |   |                          | Budget FY 1999          | Budget FY 2000     | Budget to Complete     |
| Numerous   | Various   | Various   | Various                  | 300                     | 4,462              | Continuing             |
| General Atomics                                    | Various   | Various   | Various                  | 9,140                   | 13,000             | 0                      |
| Lockheed-Martin                                    | Various   | Various   | Various                  | 200                     | 241                | 0                      |
| Jentek Sensors                                     | CPFF  | Jul 98  | Various                  | 120                     | 0                  | 0                      |
| Raytheon   | FFP   | TBD   | Various                  | 0                       | 300                | 0                      |
| Southwest Research                                 | FFP   | TBD   | Various                  | 0                       | 100                | 0                      |
| TASC   | FFP   | TBD   | Various                  | 0                       | 40                 | 0                      |
| Survival Inc                                       | FFP   | TBD   | Various                  | 0                       | 85                 | 0                      |
| Bren-Tronics                                       | FFP   | TBD   | Various                  | 0                       | 877                | 0                      |
| Sandia Corp  | FFP   | TBD   | Various                  | 0                       | 40                 | 0                      |
| General Research Corp                              | FFP   | TBD   | Various                  | 0                       | 800                | 0                      |
|  |   |   |                          | 14,227                  | 32,043             | TBD                    |
|  |   |   |                          | 0                       | 0                  | 0                      |
|  |   |   |                          | 0                       | 0                  | 951                    |
|  |   |   |                          | 0                       | 0                  | 297                    |
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|  |   |   |                          | 0                       | 0                  | 85                     |
|  |   |   |                          | 0                       | 877                | 0                      |
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Project 672146

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Exhibit R-3 (PE 0708026F)

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| BUDGET ACTIVITY  |  | RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                  |                  |                  |                  |                  | DATE                      | February 2000    |            |
|--|--|---|------------------|------------------|------------------|------------------|------------------|---------------------------|------------------|------------|
| 07 - Operational System Development  |  | PE NUMBER AND TITLE                                 |                  |                  |                  |                  |                  | PROJECT                   |                  |            |
|  |  | 0708071F Joint Logistics Program - Ammunition       |                  |                  |                  |                  |                  | 674679                    |                  |            |
|  |  | System  |                  |                  |                  |                  |                  |                           |                  |            |
|  |  | FY 1999 Actual                                      | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate          | Cost to Complete | Total Cost |
| 674679   | Ammunition Management Standard System                  | 14,698  | 11,271           | 11,238           | 11,341           | 11,457           | 11,686           | 11,918                    | Continuing       | TBD        |
|  | Quantity of RDT&E Articles                             | 0   | 0                | 0                | 0                | 0                | 0                | 0                         | 0                | 0          |
| <p>(U) <b>A. Mission Description</b></p> <p>Air Force is the Executive Agent for Joint Ammunition Management Standard System (JAMSS). JAMSS is the joint migration system being developed to improve and integrate ammunition management business functions and data across the DoD. It directly supports the goals of the DoD Logistics Strategic Plan (1996 edition) to: reduce logistics response times, provide total asset visibility, develop seamless logistics systems, and streamline the logistics infrastructure. When fully operational, JAMSS will provide integrated, flexible, and timely ammunition management information necessary for the planning, provisioning, and sustainment of military operations world-wide. The first release of the system will contain sufficient functionality to all Services to allow the current legacy systems to either be turned off completely or used minimally. The functionality to be included in the first release of JAMSS has been identified by the Munitions Management Systems Sub Group of the Joint Ordnance Commander's Group. Additional required functionality will be added in future releases based upon Service priority and available funding. When completely developed, integrated and implemented JAMSS will support functionality for all ammunition management at the Inventory Control Point (ICP) and command levels. This program is in Budget Activity 7 - Operational System Development.</p> |  |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | FY 1999 (\$ in Thousands)                              |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$11,183 Software Development                          |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$2,850 Support Contractors, Mission support, etc      |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$573 GFE/COTS   |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$92 GFE and COTS software update, debug, maintenance. |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$14,698 Total   |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | FY 2000 (\$ in Thousands)                              |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$7,595 Software Development                           |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$3,599 Support Contractors, Mission support, etc      |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$35 GFE/COTS  |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$42 GFE and COTS software update, debug, maintenance  |   |                  |                  |                  |                  |                  |                           |                  |            |
| (U)  | \$11,271 Total   |   |                  |                  |                  |                  |                  |                           |                  |            |
| Project 674679   |  | Page 1 of 5 Pages                                   |                  |                  |                  |                  |                  | Exhibit R-2 (PE 0708071F) |                  |            |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |         | DATE  | February 2000 |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
|--|---------|---|---------------|---------------------------|---------|---------|---|---------|--|---------|--|--|--|---|---|---|---|---|---|---|----------------------------------|---|--|--|--|--|--|--|-----------------------------|--|--|--|--|--|--|--|---------------------------|--|--|--|---|--|--|--|---------------------------|--|--|--|--|--|--|--|-------------------------------------|--|--|--|--|--|--|--|------------------------------|--|--|--|--|--|--|--|----------------------------|--|--|--|--|--|--|--|
| BUDGET ACTIVITY  |         | PE NUMBER AND TITLE                           | PROJECT       |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| 07 - Operational System Development  |         | 0708071F Joint Logistics Program - Ammunition | 674679        |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
|  |         | System  |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| <p>(U) <b>E. Acquisition Strategy</b><br/> DISA's Defense Enterprise Integration Services (DEIS II) contract was used to award the JAMSS development contract. DISA's DEIS II contract was awarded under full and open competition. The contractors selected under the DEIS II contract will compete for future business.</p>  |         |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| <p>(U) <b>F. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> <th></th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>(U) Preliminary Prototype Review</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Initial Contractor Test</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Contract Modification</td> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Final Contractor Test</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) System Qualification Test (SQT)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="8">* - Denotes completed event.</td> </tr> <tr> <td colspan="8">X - Denotes planned event.</td> </tr> </tbody> </table> |         |   |               |                           |         | FY 1999 |   | FY 2000 |  | FY 2001 |  |  |  | 1 | 2 | 3 | 4 | 1 | 2 | 3 | (U) Preliminary Prototype Review | * |  |  |  |  |  |  | (U) Initial Contractor Test |  |  |  |  |  |  |  | (U) Contract Modification |  |  |  | * |  |  |  | (U) Final Contractor Test |  |  |  |  |  |  |  | (U) System Qualification Test (SQT) |  |  |  |  |  |  |  | * - Denotes completed event. |  |  |  |  |  |  |  | X - Denotes planned event. |  |  |  |  |  |  |  |
|  | FY 1999 |   | FY 2000       |                           | FY 2001 |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
|  | 1       | 2   | 3             | 4                         | 1       | 2       | 3 |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| (U) Preliminary Prototype Review   | *       |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| (U) Initial Contractor Test  |         |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| (U) Contract Modification  |         |   |               | *                         |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| (U) Final Contractor Test  |         |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| (U) System Qualification Test (SQT)  |         |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| * - Denotes completed event.   |         |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| X - Denotes planned event.   |         |   |               |                           |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |
| Project 674679   |         | Page 3 of 5 Pages                             |               | Exhibit R-2 (PE 0708071F) |         |         |   |         |  |         |  |  |  |   |   |   |   |   |   |   |                                  |   |  |  |  |  |  |  |                             |  |  |  |  |  |  |  |                           |  |  |  |   |  |  |  |                           |  |  |  |  |  |  |  |                                     |  |  |  |  |  |  |  |                              |  |  |  |  |  |  |  |                            |  |  |  |  |  |  |  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |              |            |            |   |         |         |           |            |
|--|--|--------------|------------|------------|---|---------|---------|-----------|------------|
| BUDGET ACTIVITY                                    |  |              |            |            | DATE  |         | PROJECT |           |            |
| 07 - Operational System Development                |  |              |            |            | February 2000                                 |         | 674679  |           |            |
| PE NUMBER AND TITLE                                |  |              |            |            | 0708071F Joint Logistics Program - Ammunition |         |         |           |            |
| System   |  |              |            |            |   |         |         |           |            |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |              |            |            | FY 1999                                       | FY 2000 | FY 2001 |           | FY 2001    |
| (U)  | Software Development EDS   |              |            |            | 11,183  | 7,595   | 7,027   |           | 7,027      |
| (U)  | Other Govt Costs   |              |            |            | 2,850   | 3,599   |         |           | 4,015      |
| (U)  | Government Furnished Equipment (GFE)/COTS                                |              |            |            | 573   | 35      |         |           | 0          |
| (U)  | GFE and COTS software update, debug, maintenance                         |              |            |            | 92  | 42      |         |           | 196        |
| (U)  | Total  |              |            |            | 14,698  | 11,271  |         |           | 11,238     |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |              |            |            |   |         |         |           |            |
| (U)  | Performing Organizations:  |              |            |            |   |         |         |           |            |
|  | Contractor or  | Contract     |            |            |   |         |         |           |            |
|  | Government   | Method/Type  | Award or   | Performing | Project                                       |         |         |           |            |
|  | Performing   | or Funding   | Obligation | Activity   | Office  |         |         |           |            |
|  | Activity   | Vehicle      | Date       | EAC        | EAC   |         |         |           |            |
|  | Product Development Organizations  |              |            |            | Total Prior                                   | Budget  | Budget  | Budget to | Total      |
|  |  |              |            |            | to FY 1999                                    | FY 1999 | FY 2000 | Complete  | Program    |
|  | EDS  | Cost + Award | 7 Jul 97   | 43,254     | 45,774  | 11,183  | 7,595   | 7,027     | Continuing |
|  |  | Fee          |            |            |   |         |         |           | TBD        |
|  | Unknown  | TBD          |            |            | 17,038  | 0       | 0       | 0         | Continuing |
|  | Support and Management Organizations                                     |              |            |            |   |         |         |           |            |
|  | Innolog, KPMG,   |              |            |            | 16,612  | 1,793   | 2,147   | 2,211     | Continuing |
|  | MITRE, MCR   |              |            |            |   |         |         |           | TBD        |
|  | SPO WPAFB  |              |            | 17,528     | 17,528  | 927     | 1,152   | 1,495     | Continuing |
|  | GFE and COTS software  | TBD          |            | 4,990      | 4,990   | 92      | 42      | 196       | Continuing |
|  | update, debug, maintenance.  |              |            |            |   |         |         |           | TBD        |
|  | Test and Evaluation Organizations  |              |            |            |   |         |         |           |            |
|  | Army OPTEC   |              |            | 1,704      | 1,704   | 130     | 300     | 309       | Continuing |
|  | IV&V   |              |            | 1,600      | 1,600   | 0       | 0       | 0         | Continuing |
|  |  |              |            |            |   |         |         |           | TBD        |
|  |  |              |            |            |   |         |         |           | TBD        |

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Exhibit R-3 (PE 0708071F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |                           |   |                  |                           | DATE              |                   | February 2000     |                       |                  |
|--|---------------------------|---|------------------|---------------------------|-------------------|-------------------|-------------------|-----------------------|------------------|
| BUDGET ACTIVITY                                    |                           | PE NUMBER AND TITLE                           |                  |                           | PROJECT           |                   |                   |                       |                  |
| 07 - Operational System Development                |                           | 0708071F Joint Logistics Program - Ammunition |                  |                           | 674679            |                   |                   |                       |                  |
|  |                           | System  |                  |                           |                   |                   |                   |                       |                  |
| (U) Government Furnished Property:                 |                           |   |                  |                           |                   |                   |                   |                       |                  |
| Contract   |                           |   |                  |                           |                   |                   |                   |                       |                  |
| Item   | Method/Type<br>or Funding | Award or<br>Obligation                        | Delivery<br>Date | Total Prior<br>to FY 1999 | Budget<br>FY 1999 | Budget<br>FY 2000 | Budget<br>FY 2001 | Budget to<br>Complete | Total<br>Program |
| Product Development Property                       |                           |   |                  |                           |                   |                   |                   |                       |                  |
| COTS S/W and H/W                                   | GSA Sc.                   | As Req'd                                      | As Req'd         | 2,246                     | 573               | 35                | 0                 | Continuing            | TBD              |
| Support and Management Property                    |                           |   |                  |                           |                   |                   |                   |                       |                  |
| COTS S/W and Hardware                              | GSA Sch.                  | As Req'd                                      | As Req'd         | 0                         | 0                 | 0                 | 0                 | 0                     | 0                |
| Test and Evaluation Property                       |                           |   |                  |                           |                   |                   |                   |                       |                  |
| Shared with Development                            |                           |   |                  |                           |                   |                   |                   |                       |                  |
| Resources  |                           |   |                  |                           |                   |                   |                   |                       |                  |
| Subtotals  |                           |   |                  |                           |                   |                   |                   |                       |                  |
| Subtotal Product Development                       |                           |   |                  | 15,402                    | 11,756            | 7,630             | 7,027             | TBD                   | TBD              |
| Subtotal Support and Management                    |                           |   |                  | 6,317                     | 2,812             | 3,341             | 3,902             | TBD                   | TBD              |
| Subtotal Test and Evaluation                       |                           |   |                  | 403                       | 130               | 300               | 309               | TBD                   | TBD              |
| Total Project                                      |                           |   |                  | 22,122                    | 14,698            | 11,271            | 11,238            | TBD                   | TBD              |

Project 674679

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Exhibit R-3 (PE 0708071F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |  |  |                                      |                  |                  |                  |                  |                  |                  | DATE             |            | February 2000 |  |
|--|--|--|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|--|
| BUDGET ACTIVITY  |  |  | PE NUMBER AND TITLE                  |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| 07 - Operational System Development  |  |  | 0708611F Support Systems Development |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| COST (\$ in Thousands)   |  |  | FY 1999 Actual                       | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |  |
| Total Program Element (PE) Cost  |  |  | 23,943                               | 33,198           | 32,258           | 28,253           | 27,207           | 27,751           | 27,820           | Continuing       | TBD        |               |  |
| 673090   | Embedded Computer Resources Support Improvement Program (ESIP) |  | 2,186                                | 2,371            | 0                | 0                | 0                | 0                | 0                | 0                | 14,046     |               |  |
| 673318   | Product Data Systems Modernization (PDSM)                      |  | 1,168                                | 1,360            | 4,697            | 2,860            | 2,909            | 2,966            | 2,546            | Continuing       | TBD        |               |  |
| 674654   | Integrated Maintenance Data System (IMDS)*                     |  | 20,589                               | 29,467           | 27,561           | 25,393           | 24,298           | 24,785           | 25,274           | Continuing       | TBD        |               |  |
| Quantity of RDT&E Articles   |  |  | 0                                    | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |  |
| Congress added an additional \$8.0 million in RDT&E funds in FY00 for IMDS (\$8.0 million). An additional \$3.0 million was added to the IMDS project for Simulation Based Forecasting Decision Support Systems (SBFDSS)(\$1.5 million), Reengineering and Enabling Technologies (\$1.0 million), and Air Resource Rapid Reapplication Tools (\$0.5 million). The Air Force is in the process of transferring these amounts to the correct programs. \$2.0 million was earmarked for the Air Force Knowledge Management Program. Because no language accompanied this earmark, the Air Force is in the process of clarifying the intent of the earmark before proceeding. ESIP funding was transferred to PE 0708612F beginning in FY01.   |  |  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U) <b>A. Mission Description</b><br>This basket program element supports three separate programs. The ESIP program (project 673090) improves support of embedded computer system software, automates and standardizes weapon system support processes, establishes advanced support methodologies, provides automated tools and infrastructure environments, and improves readiness support to facilitate rapid software turnaround in response to changing mission and/or threat requirements. The PDSM program (project 673318) updates Air Force digital data standards to commercial industry standards that support the Continuous Acquisition and Life-Cycle Support (CALS) concept. The IMDS program develops and fields an Air Force standard maintenance information system to integrate information systems supporting Air Force maintenance activities into a single open architecture, modern decision support system that is compatible with the Global Combat Support System - Air Force (GCSS-AF) architecture. This enhanced decision support system will increase operational production capability and support system efficiency, while decreasing mobility infrastructure requirements and cost of operations. |  |  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| (U) <b>B. Budget Activity Justification</b><br>This program is a Budget Activity 7, Operational Systems Development, because projects are being engineered to support already operational weapon systems.  |  |  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |  |
| Exhibit R-2 (PE 0708611F)  |  |  |                                      |                  |                  |                  |                  |                  |                  |                  |            |               |  |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   | DATE                                 | February 2000 |
|---|---|--------------------------------------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                  |               |
| 07 - Operational System Development                 |   | 0708611F Support Systems Development |               |
| (U)   | <u>C. Program Change Summary (\$ in Thousands)</u>  |                                      |               |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999                              | FY 2000       |
| (U)   | Appropriated Value  | 22,856                               | 22,383        |
| (U)   | Adjustments to Appropriated Value   | 23,010                               | 33,383        |
|   | a. Congressional/General Reductions   | -154                                 | -3            |
|   | b. Small Business Innovative Research   | -725                                 |               |
|   | c. Omnibus or Other Above Threshold Reprogram   |                                      | -182          |
|   | d. Below Threshold Reprogram  | 1,946                                |               |
|   | e. Rescissions  | -134                                 |               |
|   | f. Other  |                                      |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |                                      | 1,341         |
| (U)   | Current Budget Submit/FY 2001 PBR   | 23,943                               | 33,198        |
| (U)   | <u>Significant Program Changes:</u>   |                                      |               |
|   | Congress added an additional \$8.0 million in RDT&E funds in FY00 for IMDS (\$8.0 million). An additional \$3.0 million was inadvertently added to this project for Simulation Based Forecasting Decision Support Systems (SBFDS)(\$1.5 million), Reengineering and Enabling Technologies (\$1.0 million), and Air Resource Rapid Reapplication Tools (\$0.5 million). ESIP funding was transferred to PE 0708612F beginning in FY01. |                                      |               |
|   |   |                                      | Total Cost    |
|   |   |                                      | TBD           |
|   |   |                                      | TBD           |
|   |   |                                      | TBD           |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |  |                                      |                  |                  |                  |                  |                  |                  |                  | DATE                       | February 2000 |
|---|--|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------|---------------|
| BUDGET ACTIVITY   |  | PE NUMBER AND TITLE                  |                  |                  |                  |                  |                  |                  |                  |                            | PROJECT       |
| 07 - Operational System Development   |  | 0708611F Support Systems Development |                  |                  |                  |                  |                  |                  |                  |                            | 673090        |
|   | COST (\$ in Thousands)   | FY 1999 Actual                       | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                 |               |
| 673090  | Embedded Computer Resources Support Improvement Program (ESIP) | 2,186                                | 2,371            | 0                | 0                | 0                | 0                | 0                | 0                | 14,046                     |               |
| ESIP funding transferred to PE 0708612F beginning in FY01.  |  |                                      |                  |                  |                  |                  |                  |                  |                  |                            |               |
| <p><b>(U) A. Mission Description</b><br/>           This project conducts research and development to improve the support of embedded mission-critical software intensive systems. It encompasses automation and standardization of support processes, advanced support methodologies, tools and environments, and readiness support to facilitate rapid turnaround of software in response to changing mission and/or changing threat requirements.</p>  |  |                                      |                  |                  |                  |                  |                  |                  |                  |                            |               |
| <p><b>FY 1999 (\$ in Thousands)</b></p> <p>(U) \$127 Adaptive Software Flight Demonstration (ASFD)</p> <p>(U) \$305 Adaptive Software Technology Development (ASTD)</p> <p>(U) \$211 Automated Operational Flight Program (OFF) Validation (AutoVal)</p> <p>(U) \$305 Embedded Information Systems Re-engineering (EISR)</p> <p>(U) \$305 Incremental Software Evolution for Real-Time (INSERT)</p> <p>(U) \$376 Reconfigurable Aerospace Computer Emulator (RACE)</p> <p>(U) \$439 Virtual Test Station (VTS)</p> <p>(U) \$118 Weapon System Open Architecture Demonstration (WSOAD)</p> <p>(U) \$2,186 Total</p>                                  |  |                                      |                  |                  |                  |                  |                  |                  |                  |                            |               |
| <p><b>FY 2000 (\$ in Thousands)</b></p> <p>(U) \$15 Adaptive Software Flight Demonstration (ASFD)</p> <p>(U) \$325 Adaptive Software Technology Development (ASTD)</p> <p>(U) \$40 Embedded Information Systems Re-engineering (EISR)</p> <p>(U) \$415 Incremental Software Evolution for Real-Time (INSERT)</p> <p>(U) \$115 Incremental Upgrade of Legacy Systems Technology Demonstration (IULS TD)</p> <p>(U) \$460 Reconfigurable Aerospace Computer Emulator (RACE)</p> <p>(U) \$70 Real-Time Defense Information Infrastructure Common Operating Environment (RT DII COE) Support</p> <p>(U) \$514 Virtual Engineering Environment (VEE)</p> |  |                                      |                  |                  |                  |                  |                  |                  |                  |                            |               |
| Project 673090  |  |                                      |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2A (PE 0708611F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |  |   |          |          |          |                            |          |               |            |
|--|--|---|----------|----------|----------|----------------------------|----------|---------------|------------|
| BUDGET ACTIVITY                                      |  | PE NUMBER AND TITLE   |          |          |          | DATE                       |          | PROJECT       |            |
| 07 - Operational System Development                  |  | 0708611F Support Systems Development                                    |          |          |          |                            |          | February 2000 |            |
| 07 - Operational System Development                  |  | 0708611F Support Systems Development                                    |          |          |          |                            |          | 673090        |            |
| (U)  | <u>A. Mission Description Continued</u>                          |   |          |          |          |                            |          |               |            |
| (U)  | FY 2000 (\$ in Thousands) Continued                              |   |          |          |          |                            |          |               |            |
| (U)  | \$417  | Weapon Systems Open Architecture (WSOA)                                 |          |          |          |                            |          |               |            |
| (U)  | \$2,371  | Total   |          |          |          |                            |          |               |            |
| (U)  | FY 2001 (\$ in Thousands)  |   |          |          |          |                            |          |               |            |
| (U)  | \$0  | No Activity (ESIP funding transferred to PE 0708612F beginning in FY01) |          |          |          |                            |          |               |            |
| (U)  | \$0  | Total   |          |          |          |                            |          |               |            |
| (U)  | <u>B. Project Change Summary</u>                                 |   |          |          |          |                            |          |               |            |
|  | N/A  |   |          |          |          |                            |          |               |            |
| (U)  | <u>C. Other Program Funding Summary (\$ in Thousands)</u>        |   |          |          |          |                            |          |               |            |
|  |  | FY 1999   | FY 2000  | FY 2001  | FY 2002  | FY 2003                    | FY 2004  | FY 2005       | Total Cost |
|  |  | Actual  | Estimate | Estimate | Estimate | Estimate                   | Estimate | Estimate      | Complete   |
| (U)  | AF RDT&E   |   |          |          |          |                            |          |               |            |
| (U)  | Other APPN   |   |          |          |          |                            |          |               |            |
| (U)  | Other Procurement AF, BA 3, P-1:55, ESIP, PE 78611F              | 2,356   | 11,635   | 0        | 0        | 0                          | 0        | 0             | Continuing |
|  | ESIP funding transferred to PE 0708612F starting in FY01.        |   |          |          |          |                            |          |               |            |
| (U)  | <u>D. Acquisition Strategy</u>                                   |   |          |          |          |                            |          |               |            |
|  | All major contracts are awarded after full and open competition. |   |          |          |          |                            |          |               |            |
| (U)  | <u>E. Schedule Profile</u>                                       |   |          |          |          |                            |          |               |            |
|  |  | FY 1999   |          | FY 2000  |          | FY 2001                    |          |               |            |
|  |  | 1   | 2        | 3        | 4        | 1                          | 2        | 3             | 4          |
| (U)  | Start Adaptive Software Flight Demonstration (ASFD)              |   | *        |          |          |                            |          |               |            |
| (U)  | ASFD Demo  |   |          |          |          | *                          |          |               |            |
| (U)  | Adaptive Software Technology (ASTD) Demos                        |   |          |          | *        |                            |          |               | X          |
| (U)  | Automated OFP Validation Demo                                    |   |          |          | *        |                            |          |               |            |
| (U)  | Start Embedded Information Systems Re-engineering (EISR)         |   | *        |          |          |                            |          |               |            |
| (U)  | EISR Demos   |   |          |          | *        |                            | X        |               |            |
| Project 673090                                       |  | Page 4 of 16 Pages  |          |          |          | Exhibit R-2A (PE 0708611F) |          |               |            |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)                           |                                      |                     |                     |                |                        | DATE           | February 2000  |                |                    |               |
|--|--------------------------------------|---------------------|---------------------|----------------|------------------------|----------------|----------------|----------------|--------------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                  |                     |                     |                |                        | PROJECT        |                |                |                    |               |
| 07 - Operational System Development  | 0708611F Support Systems Development |                     |                     |                |                        | 673090         |                |                |                    |               |
| (U) A. Project Cost Breakdown (\$ in Thousands)                              | FY 1999                              | FY 2000             | FY 2001             |                |                        |                |                |                |                    |               |
| (U) Adaptive Software Flight Demonstration (ASFD)                            | 127                                  | 15                  | 0                   |                |                        | FY 2001        |                |                |                    |               |
| (U) Adaptive Software Technology Development (ASTD)                          | 305                                  | 325                 | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Automated OFP Validation (AutoVal)                                       | 211                                  | 0                   | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Embedded Information Systems Re-engineering (EISR)                       | 305                                  | 40                  | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Incremental Software Evolution for Real-Time (INSERT)                    | 305                                  | 415                 | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Incremental Upgrade of Legacy Systems (IULS0 Tech Demo)                  | 0                                    | 115                 | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Reconfigurable Aerospace Computer Emulator (RACE)                        | 376                                  | 460                 | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Real-Time DII COE IPT Support  | 0                                    | 70                  | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Virtual Engineering Environment  | 0                                    | 514                 | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Virtual Test Station (VTS)   | 439                                  | 0                   | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Weapon Systems Open Architecture (WSOA)                                  | 118                                  | 417                 | 0                   |                |                        | 0              |                |                |                    |               |
| (U) Total  | 2,186                                | 2,371               | 0                   |                |                        | 0              |                |                |                    |               |
| ESIP funding transferred to PE 0708612F starting in FY01.                    |                                      |                     |                     |                |                        |                |                |                |                    |               |
| (U) B. Budget Acquisition History and Planning Information (\$ in Thousands) |                                      |                     |                     |                |                        |                |                |                |                    |               |
| (U) Performing Organizations:  |                                      |                     |                     |                |                        |                |                |                |                    |               |
| Contractor or Government   | Method/Type                          | Award or Obligation | Performing Activity | Project Office | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program |
| SAIC   | D.O.                                 | Various             | N/A                 | N/A            | 4,384                  | 650            | 381            | 0              | 5,415              |               |
| TASC   | D.O.                                 | Various             | N/A                 | N/A            | 2,274                  |                |                |                | 2,274              |               |
| TRW  | D.O.                                 | Various             | N/A                 | N/A            | 1,525                  | 282            | 200            | 0              | 2,007              |               |
| Boeing   | D.O.                                 | Various             | N/A                 | N/A            | 158                    | 493            | 845            | 0              | 1,496              |               |
| Lockheed Martin/CMU  | D.O.                                 | Various             | N/A                 | N/A            | 157                    | 761            | 875            | 0              | 1,793              |               |
| Other (JAWS, RT DII)   |                                      |                     |                     |                | 54                     |                | 70             | 0              | 124                |               |

Exhibit R-3 (PE 0708611F)



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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)        |     |                                      |       | DATE                  | February 2000             |
|---|-----|--------------------------------------|-------|-----------------------|---------------------------|
| BUDGET ACTIVITY   |     | PE NUMBER AND TITLE                  |       | PROJECT               |                           |
| 07 - Operational System Development                       |     | 0708611F Support Systems Development |       | 673090                |                           |
| (U) <u>Performing Organizations Continued:</u>            |     |                                      |       |                       |                           |
| ESIP funding transferred to PE 0708612F starting in FY01. |     |                                      |       |                       |                           |
| <u>Support and Management Organizations</u>               |     |                                      |       |                       |                           |
| OO-ALC  | N/A | N/A                                  | 937   |                       | 937                       |
| <u>Test and Evaluation Organizations</u>                  |     |                                      |       |                       |                           |
| <u>Subtotals</u>  |     |                                      |       |                       |                           |
| Subtotal Product Development                              |     |                                      |       | <u>Budget FY 2000</u> | <u>Budget to Complete</u> |
| Subtotal Support and Management                           |     |                                      |       | 2,371                 | 0                         |
| Subtotal Test and Evaluation                              |     |                                      |       | 2,186                 | 0                         |
| Total Project   |     |                                      | 9,489 | 2,371                 | 0                         |
|   |     |                                      |       |                       | 13,109                    |
|   |     |                                      |       |                       | 937                       |
|   |     |                                      |       |                       | 14,046                    |

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Exhibit R-3 (PE 0708611F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   |   |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY   |   | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  | PROJECT          |            |               |
| 07 - Operational System Development   |   | 0708611F Support Systems Development  |                  |                  |                  |                  |                  |                  | 673318           |            |               |
| COST (\$ in Thousands)  |   | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 673318  | Product Data Systems Modernization (PDSM) | 1,168   | 1,360            | 4,697            | 2,860            | 2,909            | 2,966            | 2,546            | Continuing       | TBD        |               |
| <b>(U) A. Mission Description</b>   |   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| This project implements the Air Force portion of the Joint Computer-Aided Acquisition and Logistics Support (JCALS) system ensuring the uninterrupted transition of legacy system functional capabilities to the new joint systems. |   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| <b>(U) FY 1999 (\$ in Thousands)</b>  |   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$195                                     | Managed AF technical data activities  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$11                                      | Sustained Joint Engineering Data Management Information and Control System (JEDMICS).                 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$152                                     | Developed and maintained digital data templates for new acquisition technical orders                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$204                                     | Plan/participated in JCALS to ensure AF requirements are met  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$376                                     | Activated AF JCALS sites to ensure timely and accurate data is available and useable                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$152                                     | Tested digital data specifications/standards and represented AF at international standards activities |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$78                                      | Provided direct support to weapon systems, Logistics and Product Centers, and MAJCOMs                 |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,168                                   | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |
| <b>(U) FY 2000 (\$ in Thousands)</b>  |   |   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$234                                     | Manage AF technical data activities   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$18                                      | Sustain JEDMICS   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$183                                     | Develop and maintain digital templates for new acquisition technical orders                           |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$245                                     | Plan/participate in JCALS to ensure AF requirements are met   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$446                                     | Activate AF JCALS sites to ensure timely and accurate data is available and useable                   |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$58                                      | Test digital data specifications/standards and represent AF at international standards activities     |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$176                                     | Provide direct support to weapon systems, Logistics and Product Centers, and MAJCOMs                  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$1,360                                   | Total   |                  |                  |                  |                  |                  |                  |                  |            |               |

Project 673318

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Exhibit R-2A (PE 0708611F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)  |   | DATE                       | February 2000   |
|---|---|----------------------------|-----------------|
| BUDGET ACTIVITY   | PE NUMBER AND TITLE                         | PROJECT                    |                 |
| <b>07 - Operational System Development</b>  | <b>0708611F Support Systems Development</b> | <b>673318</b>              |                 |
| (U) <b>A. Mission Description Continued</b>   |   |                            |                 |
| (U) <b>FY 2001 (\$ in Thousands)</b>  |   |                            |                 |
| (U) Manage AF technical data activities   |   |                            |                 |
| (U) \$643   |   |                            |                 |
| (U) Sustain JEDMICS   |   |                            |                 |
| (U) \$33  |   |                            |                 |
| (U) Develop and maintain digital templates for new acquisition technical orders                               |   |                            |                 |
| (U) \$499   |   |                            |                 |
| (U) Plan/participate in JCALS to ensure AF requirements are met   |   |                            |                 |
| (U) \$673   |   |                            |                 |
| (U) Activate AF JCALS sites to ensure timely and accurate data is available and useable                       |   |                            |                 |
| (U) \$1,244   |   |                            |                 |
| (U) \$147   |   |                            |                 |
| (U) Test digital data specifications/standards and represent AF at international standards activities         |   |                            |                 |
| (U) \$458   |   |                            |                 |
| (U) Provide direct support to weapon systems, Logistics and Product Centers, and MAJCOMs                      |   |                            |                 |
| (U) \$1,000   |   |                            |                 |
| (U) Automated Civil Engineer System (ACES)  |   |                            |                 |
| (U) \$4,697   |   |                            |                 |
| (U) <b>Total</b>  |   |                            |                 |
| (U) <b>B. Project Change Summary</b>  |   |                            |                 |
| PBD 205 transferred RDT&E funds for FY01-05 for the Automated Civil Engineer System into project 3318 (PDSM). |   |                            |                 |
| (U) <b>C. Other Program Funding Summary (\$ in Thousands)</b>   |   |                            |                 |
|   | <b>FY 1999</b>                              | <b>FY 2000</b>             | <b>FY 2001</b>  |
|   | <b>Actual</b>                               | <b>Estimate</b>            | <b>Estimate</b> |
| (U) AF RDT&E  |   |                            |                 |
| (U) Other APPN  |   |                            |                 |
| (U) Not applicable.   |   |                            |                 |
| (U) <b>D. Acquisition Strategy</b>  |   |                            |                 |
| All major contracts are awarded after full and open competition.  |   |                            |                 |
| (U) <b>E. Schedule Profile</b>  |   |                            |                 |
|   | <b>FY 1999</b>                              | <b>FY 2000</b>             | <b>FY 2001</b>  |
|   | <b>1</b>                                    | <b>2</b>                   | <b>3</b>        |
|   | <b>4</b>                                    | <b>1</b>                   | <b>2</b>        |
|   | <b>3</b>                                    | <b>4</b>                   | <b>3</b>        |
|   |   |                            | <b>4</b>        |
| (U) Not applicable. This is a support and management level of effort program. All activities are ongoing.     |   |                            |                 |
| Project 673318  |   | Exhibit R-2A (PE 0708611F) |                 |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)   |                                      |                          |                         |                    |                        | DATE            | February 2000 |
|--|--------------------------------------|--------------------------|-------------------------|--------------------|------------------------|-----------------|---------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE                  |                          |                         |                    |                        | PROJECT         |               |
| 07 - Operational System Development  | 0708611F Support Systems Development |                          |                         |                    |                        | 673318          |               |
| (U) A. Project Cost Breakdown (\$ in Thousands)  | FY 1999                              | FY 2000                  | FY 2001                 |                    |                        |                 |               |
| (U) Manage AF technical data activities  | 195                                  | 234                      | 643                     |                    |                        |                 |               |
| (U) Plan/participate/activate JEDMICS sites  | 11                                   | 18                       | 33                      |                    |                        |                 |               |
| (U) Test digital data specifications/standards and represent AF at international standards activities                | 152                                  | 58                       | 147                     |                    |                        |                 |               |
| (U) Develop and maintain digital data templates for new acquisition technical orders                                 | 152                                  | 183                      | 499                     |                    |                        |                 |               |
| (U) Plan/participate in JCALS to ensure AF requirements and schedules are met  | 204                                  | 245                      | 673                     |                    |                        |                 |               |
| (U) Activate AF JCALS sites to ensure timely and accurate data is available and useable                              | 376                                  | 446                      | 1,244                   |                    |                        |                 |               |
| (U) Provide direct support to weapon systems, Logistics and Product Centers, and Major Commands (MAJCOMS)            | 78                                   | 176                      | 458                     |                    |                        |                 |               |
| (U) Automated Civil Engineer System (ACES)   | 0                                    | 0                        | 1,000                   |                    |                        |                 |               |
| (U) Total  | 1,168                                | 1,360                    | 4,697                   |                    |                        |                 |               |
| PBD 205 transferred RDT&E funds for FY01-05 for the Automated Civil Engineer System (ACES) into project 3318 (PDSM). |                                      |                          |                         |                    |                        |                 |               |
| (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)   |                                      |                          |                         |                    |                        |                 |               |
| (U) Performing Organizations:  |                                      |                          |                         |                    |                        |                 |               |
| Contractor or Government   | Method/Type                          | Award or Obligation Date | Performing Activity EAC | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999  |               |
| Activity   | Vehicle                              |                          |                         |                    |                        | Budget FY 2000  |               |
| Product Development Organizations  |                                      |                          |                         |                    |                        | Budget Complete |               |
| ACES   | TBD                                  | TBD                      | N/A                     | N/A                | 0                      | 0               |               |
| Support and Management Organizations   |                                      |                          |                         |                    |                        | Continuing      |               |
| RJO  | ECRC                                 | Var                      | N/A                     | N/A                | 6,989                  | 364             |               |
| LOGTEC   | GSA                                  | Var                      | N/A                     | N/A                | 10,527                 | 588             |               |
| BTAS   | 8A                                   | Var                      | N/A                     | N/A                | 183                    | 216             |               |
| Test and Evaluation Organizations  |                                      |                          |                         |                    |                        | 252             |               |
|  |                                      |                          |                         |                    |                        | 651             |               |
|  |                                      |                          |                         |                    |                        | Continuing      |               |
|  |                                      |                          |                         |                    |                        | 1,153           |               |
|  |                                      |                          |                         |                    |                        | Continuing      |               |
|  |                                      |                          |                         |                    |                        | 1,893           |               |
|  |                                      |                          |                         |                    |                        | Continuing      |               |
|  |                                      |                          |                         |                    |                        | 651             |               |
|  |                                      |                          |                         |                    |                        | Continuing      |               |
|  |                                      |                          |                         |                    |                        | TBD             |               |
|  |                                      |                          |                         |                    |                        | TBD             |               |
|  |                                      |                          |                         |                    |                        | TBD             |               |
|  |                                      |                          |                         |                    |                        | TBD             |               |

| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |             |                                      |          |                        |                |                |                    |                |               | DATE | PROJECT |
|--|-------------|--------------------------------------|----------|------------------------|----------------|----------------|--------------------|----------------|---------------|------|---------|
| BUDGET ACTIVITY                                    |             | PE NUMBER AND TITLE                  |          |                        |                |                |                    |                |               |      |         |
| 07 - Operational System Development                |             | 0708611F Support Systems Development |          |                        |                |                |                    | February 2000  |               |      |         |
| 07 - Operational System Development                |             | 0708611F Support Systems Development |          |                        |                |                |                    | 673318         |               |      |         |
| (U) Government Furnished Property:                 |             |                                      |          |                        |                |                |                    |                |               |      |         |
|  |             | Contract                             |          |                        |                |                |                    |                |               |      |         |
| Item   | Method/Type | Award or                             | Delivery | Budget                 | Budget         | Budget         | Budget to          | Budget         | Total         |      |         |
| Description  | or Funding  | Obligation                           | Date     | FY 1999                | FY 2000        | FY 2001        | Complete           | FY 2001        | Program       |      |         |
| Product Development Property                       | Vehicle     | Date                                 | Date     |                        |                |                |                    |                |               |      |         |
| Not Applicable                                     |             |                                      |          |                        |                |                |                    |                |               |      |         |
| Support and Management Property                    |             |                                      |          |                        |                |                |                    |                |               |      |         |
| Not Applicable                                     |             |                                      |          |                        |                |                |                    |                |               |      |         |
| Test and Evaluation Property                       |             |                                      |          |                        |                |                |                    |                |               |      |         |
| Not Applicable                                     |             |                                      |          |                        |                |                |                    |                |               |      |         |
| Subtotals  |             |                                      |          |                        |                |                |                    |                |               |      |         |
| Subtotal Product Development                       |             |                                      |          | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget to Complete | Budget FY 2001 | Total Program |      |         |
| Subtotal Support and Management                    |             |                                      |          | 0                      | 0              | 0              | TBD                | 1,000          | TBD           |      |         |
| Subtotal Test and Evaluation                       |             |                                      |          | 17,699                 | 1,168          | 1,360          | TBD                | 3,697          | TBD           |      |         |
| Total Project                                      |             |                                      |          | 17,699                 | 1,168          | 1,360          | TBD                | 4,697          | TBD           |      |         |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)   |  |  |                  |                  |                  |                  |                  |                  |                  |
|--|--|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| DATE February 2000   |  |  |                  |                  |                  |                  |                  |                  |                  |
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  |
| 07 - Operational System Development  |  | 0708611F Support Systems Development   |                  |                  |                  |                  |                  |                  |                  |
| COST (\$ in Thousands)   |  | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete |
| 674654   | Integrated Maintenance Data System (IMDS)* | 20,589   | 29,467           | 27,561           | 25,393           | 24,298           | 24,785           | 25,274           | Continuing       |
|  |  |  |                  |                  |                  |                  |                  |                  | TBD              |
| Congress added an additional \$8.0 million in RDT&E funds in FY00 for IMDS (\$8.0 million). In FY00, an additional \$3.0 million was added to this project for Simulation Based Forecasting Decision Support Systems (SBFDSS)(\$1.5 million), Reengineering and Enabling Technologies (\$1.0 million), and Air Resource Rapid Reapplication Tools (\$0.5 million).   |  |  |                  |                  |                  |                  |                  |                  |                  |
| (U) <u>A. Mission Description</u>  |  |  |                  |                  |                  |                  |                  |                  |                  |
| The IMDS program is an information technology program to provide maintenance personnel access to all maintenance information areas under one system. IMDS will utilize distributed databases, link designated existing legacy systems, and provide an integrated tool for interfacing with certain other legacy systems that will be sustained for the foreseeable future. The full IMDS capability is reached through multiple development increments of the application software, each increment building on the previous one. Increments 1-3 established core capabilities at the retail level. Increment 4 will begin to incorporate wholesale-level functionality as well as continue expansion of retail capabilities. |  |  |                  |                  |                  |                  |                  |                  |                  |
| (U) <u>FY 1999 (\$ in Thousands)</u>   |  |  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$18,473                                   | IMDS Contract Increment 3 - Base level core capabilities, design and coding, expanded interfaces, and Test Bed Activities. |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$1,325                                    | Support Contractors (MITRE, Tecolote, TEMS, ITSP)  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$791                                      | SPO Operations.  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$20,589                                   | Total  |                  |                  |                  |                  |                  |                  |                  |
| (U) <u>FY 2000 (\$ in Thousands)</u>   |  |  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$15,056                                   | IMDS System Contract Increment 3 delivery to include DT&E and OT&E.  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$6,500                                    | Computer-Based Training Development  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$1,500                                    | Expeditionary Air Force Pre-Deployment and Rapid Data Download Capability Development                                      |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$584                                      | Support Contractors (MITRE, Tecolote, SenCom, etc.)  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$2,827                                    | SPO Operations.  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$1,500                                    | Simulation Based Forecasting Decision Support Systems (SBFDSS)   |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$1,000                                    | Reengineering and Enabling Technologies  |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$500                                      | Air Resource Rapid Reapplication Tools   |                  |                  |                  |                  |                  |                  |                  |
| (U)  | \$29,467                                   | Total  |                  |                  |                  |                  |                  |                  |                  |
| Project 674654   |  |  |                  |                  |                  |                  |                  |                  |                  |
| Page 12 of 16 Pages  |  |  |                  |                  |                  |                  |                  |                  |                  |
| Exhibit R-2A (PE 0708611F)   |  |  |                  |                  |                  |                  |                  |                  |                  |

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## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE \_\_\_\_\_

February 2000

## **BUDGET ACTIVITY**

PE NUMBER AND TITLE

## 07 - Operational System Development

0708611F Support Systems Development

## PROJECT

**674654**

(U) A. Mission Description Continued

(U) FY 2001 (\$ in Thousands)

|     |          |   |
|-----|----------|---|
| (U) | \$20,586 | IMDS System Contract Fielding Requirements. |
|-----|----------|---|

|     |       |  |
|-----|-------|--|
| (U) | \$782 | Support Contractors (MITRE, Tecolote, SenCom, etc.). |
|-----|-------|--|

(U) \$3,193 SPO Operations.

|     |         |                |
|-----|---------|----------------|
| (U) | \$3,000 | Feeder Systems |
|-----|---------|----------------|

|       |     |          |
|-------|-----|----------|
| Total | (U) | \$27,561 |
|-------|-----|----------|

**(U) B. Project Change Summary**

Congress added an additional \$8.0 million in FY00 for IMDS (\$8.0 million). In FY00, an additional \$3.0 million was added to this project for Simulation Based Forecasting Decision Support Systems (SBFDSS)(\$1.5 million), Reengineering and Enabling Technologies (\$1.0 million), and Air Resource Rapid Reapplication Tools (\$0.5 million). The Air Force is in the process of transferring these amounts to the correct programs. For FY01, PBD 726 added \$3.0 million in RDT&E funds to project 4654 (IMDS) for Feeder Systems.

(U) **C. Other Program Funding Summary (\$ in Thousands)**

|  | <u>FY 1999</u> | <u>Actual</u> |
|--|----------------|---------------|
|--|----------------|---------------|

|                              | FY 1999   | FY 2000   |
|------------------------------|-----------|-----------|
| 1. <b>Operating Expenses</b> | 1,000,000 | 1,000,000 |
| 2. <b>Capital Expenses</b>   | 500,000   | 500,000   |
| 3. <b>Debt Service</b>       | 200,000   | 200,000   |
| 4. <b>Other Expenses</b>     | 100,000   | 100,000   |
| 5. <b>Total Expenses</b>     | 1,800,000 | 1,800,000 |
| 6. <b>Revenue</b>            | 1,800,000 | 1,800,000 |
| 7. <b>Surplus/Deficit</b>    | 0         | 0         |

|  | FY 1999 | FY 2000 | FY 2001 |
|--|---------|---------|---------|
|--|---------|---------|---------|

|                            | FY 1999       | FY 2000       | FY 2001       | FY 2002       |
|----------------------------|---------------|---------------|---------------|---------------|
| 1. <b>General Fund</b>     | 100.00        | 100.00        | 100.00        | 100.00        |
| 2. <b>Special Funds</b>    | 100.00        | 100.00        | 100.00        | 100.00        |
| 3. <b>Capital Projects</b> | 100.00        | 100.00        | 100.00        | 100.00        |
| 4. <b>Debt Service</b>     | 100.00        | 100.00        | 100.00        | 100.00        |
| 5. <b>Other Funds</b>      | 100.00        | 100.00        | 100.00        | 100.00        |
| <b>Total</b>               | <b>500.00</b> | <b>500.00</b> | <b>500.00</b> | <b>500.00</b> |

|                            | FY 1999       | FY 2000       | FY 2001       | FY 2002       | FY 2003       |
|----------------------------|---------------|---------------|---------------|---------------|---------------|
| 1. <b>General Fund</b>     | 100.00        | 100.00        | 100.00        | 100.00        | 100.00        |
| 2. <b>Special Funds</b>    | 100.00        | 100.00        | 100.00        | 100.00        | 100.00        |
| 3. <b>Capital Projects</b> | 100.00        | 100.00        | 100.00        | 100.00        | 100.00        |
| 4. <b>Debt Service</b>     | 100.00        | 100.00        | 100.00        | 100.00        | 100.00        |
| 5. <b>Other Funds</b>      | 100.00        | 100.00        | 100.00        | 100.00        | 100.00        |
| <b>Total</b>               | <b>400.00</b> | <b>400.00</b> | <b>400.00</b> | <b>400.00</b> | <b>400.00</b> |

|     | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 |
|-----|---------|---------|---------|---------|---------|---------|
| ... |         |         |         |         |         |         |

|                          | FY 1999     | FY 2000     | FY 2001     | FY 2002     | FY 2003     | FY 2004     | FY 2005     |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Operating Expenses:      |             |             |             |             |             |             |             |
| Salaries and benefits    | \$1,678,000 | \$1,700,000 | \$1,720,000 | \$1,740,000 | \$1,760,000 | \$1,780,000 | \$1,800,000 |
| Travel                   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   |
| Telephone                | \$50,000    | \$50,000    | \$50,000    | \$50,000    | \$50,000    | \$50,000    | \$50,000    |
| Postage                  | \$20,000    | \$20,000    | \$20,000    | \$20,000    | \$20,000    | \$20,000    | \$20,000    |
| Printing                 | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Repairs and maintenance  | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Supplies                 | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Utilities                | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Insurance                | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Depreciation             | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Other                    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    | \$10,000    |
| Total Operating Expenses | \$1,908,000 | \$1,930,000 | \$1,950,000 | \$1,970,000 | \$1,990,000 | \$2,010,000 | \$2,030,000 |
| Capital Outlay:          |             |             |             |             |             |             |             |
| Equipment                | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   |
| Construction             | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   | \$100,000   |
| Total Capital Outlay     | \$200,000   | \$200,000   | \$200,000   | \$200,000   | \$200,000   | \$200,000   | \$200,000   |
| Total Available Funds    | \$2,108,000 | \$2,130,000 | \$2,150,000 | \$2,170,000 | \$2,190,000 | \$2,210,000 | \$2,230,000 |

|  | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | Cost to |
|--|---------|---------|---------|---------|---------|---------|---------|---------|
|--|---------|---------|---------|---------|---------|---------|---------|---------|

Total Cost

(U) AF RDT&amp;E

Other APPN

(U) Other Procurement AF, BA 3.

P-1:55. IMDS (PE

0708611F).

#### (U) D. Acquisition Strategy

**All major contracts are awarded after full and open competition.**

**U) E. Schedule Profile**

FY 1999

FY 2000

FY 2001

Project 674654

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Exhibit R-2A (PE 0708611F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit) |   |   |   |   |               | DATE | February 2000 |
|--|---|---|---|---|---------------|------|---------------|
| BUDGET ACTIVITY                                      | PE NUMBER AND TITLE                         |   |   |   | PROJECT       |      |               |
| <b>07 - Operational System Development</b>           | <b>0708611F Support Systems Development</b> |   |   |   | <b>674654</b> |      |               |
| (U) E. Schedule Profile Continued                    | FY 1999                                     |   |   |   | FY 2000       |      |               |
|  | 1   | 2 | 3 | 4 | 1             | 2    |               |
|  | *   |   |   |   |               |      |               |
| (U) Beta Support Completed                           |   |   |   |   |               |      |               |
| (U) Increment 3 Requirement Definition/Design        |   |   |   |   |               |      |               |
| (U) Development of IMDS core capability              |   |   |   |   |               |      |               |
| (U) OT&E Core (Increments 1, 2, & 3)                 |   |   |   |   |               |      |               |
| * denotes completed event                            |   |   |   | X |               |      |               |
| X denotes planned event                              |   |   |   |   |               | X    |               |

Project 674654
Page 14 of 16 Pages
Exhibit R-2A (PE 0708611F)

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[illegible]

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)  |     |                                      |     | DATE                  | February 2000             |
|---|-----|--------------------------------------|-----|-----------------------|---------------------------|
| BUDGET ACTIVITY   |     | PE NUMBER AND TITLE                  |     | PROJECT               |                           |
| 07 - Operational System Development   |     | 0708611F Support Systems Development |     | 674654                |                           |
| (U) <u>Performing Organizations Continued:</u>  |     |                                      |     |                       |                           |
| <u>Product Development Organizations</u>  |     |                                      |     |                       |                           |
| <u>Data Download Capability</u>   |     |                                      |     |                       |                           |
| <u>Dev</u>  |     |                                      |     |                       |                           |
| TBD   | TBD | TBD                                  | TBD | 0                     | 3,000                     |
| Feeder Systems  | TBD | N/A                                  | N/A | 0                     | 3,000                     |
| <u>Support and Management Organizations</u>   |     |                                      |     |                       |                           |
| Support Contractors   | Var | N/A                                  | N/A | 1,325                 | 782                       |
| SPO Operations  | N/A | N/A                                  | N/A | 791                   | 3,193                     |
| <u>Test and Evaluation Organizations</u>  |     |                                      |     |                       |                           |
| <u>Subtotals</u>  |     |                                      |     |                       |                           |
| Subtotal Product Development  |     |                                      |     | <u>Budget FY 2000</u> | <u>Budget to Complete</u> |
| Subtotal Support and Management   |     |                                      |     | 29,185                | 18,473                    |
| Subtotal Test and Evaluation  |     |                                      |     | 10,387                | 2,116                     |
| Total Project   |     |                                      |     | 39,572                | 20,589                    |
| FY00 amount includes the Congressionally added amount of \$3.0 million that was added to this project for Simulation Based Forecasting Decision Support Systems (SBFDSS)(\$1.5 million), Reengineering and Enabling Technologies (\$1.0 million), and Air Resource Rapid Reapplication Tools (\$0.5 million). |     |                                      |     |                       |                           |
| FY00 amount includes the Congressionally added amount of \$3.0 million that was added to this project for Simulation Based Forecasting Decision Support Systems (SBFDSS)(\$1.5 million), Reengineering and Enabling Technologies (\$1.0 million), and Air Resource Rapid Reapplication Tools (\$0.5 million). |     |                                      |     |                       |                           |

Project 674654

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Exhibit R-3 (PE 0708611F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)                              |  |   |                  |                  |                  |                  |                  |                  |                  | DATE                      | February 2000 |
|--|--|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|---------------|
| BUDGET ACTIVITY  |  | PE NUMBER AND TITLE   |                  |                  |                  |                  |                  |                  |                  | PROJECT                   |               |
| 07 - Operational System Development  |  | 0708612F Computer Resources Support Improvement   |                  |                  |                  |                  |                  |                  |                  | 674851                    |               |
|  |  | Program   |                  |                  |                  |                  |                  |                  |                  |                           |               |
|  |  | FY 1999 Actual  | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost                |               |
| 674851   | Embedded Comp Res Spt Prog Impr  | 0   | 0                | 2,356            | 3,363            | 3,416            | 3,485            | 3,553            | Continuing       | TBD                       |               |
|  | Quantity of RDT&E Articles   | 0   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                         |               |
| Note: In FY 2001, funding was moved to this PE from PE 0708611F, Project 673090. |  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | <b>A. Mission Description</b><br>This program conducts research and development to improve the support of mission-critical software intensive systems. It encompasses automation and standardization of support processes, advanced support methodologies, tools and environments, and readiness support to facilitate rapid turnaround of software in response to changing mission and/or changing threat requirements. |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | FY 1999 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$0  | Previously accomplished in PE 0708611F.   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$0  | Total   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | FY 2000 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$0  | Previously accomplished in PE 0708611F.   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$0  | Total   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | FY 2001 (\$ in Thousands)  |   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$350  | Continue Adaptive Software Technology Development (ASTD). The objective of ASTD is to develop, demonstrate, and transfer adaptive software techniques for embedded weapon system software. The ASTD effort provides the defense software development community with an application design methodology allowing the use of commercial and emerging technologies to construct robust, platform-independent, resource adaptive applications. Such applications can respond to both mission profile changes (e.g., change from Air-to-Air to Air-to-Ground combat) and dynamic mission events that drive changing computational resource requirements, such as increased numbers of targets or hardware failures. |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$125  | Continue Incremental Upgrade of Legacy Systems Tech Demo (IULS TD). The object of IULS TD is to develop, demonstrate, and transition technology that will enable cost-effective, incremental improvements to fielded embedded information systems, affordably allowing systems to operate in a 'System of Systems'.   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| (U)  | \$300  | Continue Reconfigurable Aerospace Computer Emulator (RACE). The object of RACE is to improve the reliability and maintainability of   |                  |                  |                  |                  |                  |                  |                  |                           |               |
| Project 674851   |  | Page 1 of 6 Pages   |                  |                  |                  |                  |                  |                  |                  | Exhibit R-2 (PE 0708612F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  | DATE    | February 2000 |
|---|--|---------|---------------|
| BUDGET ACTIVITY                                     | PE NUMBER AND TITLE  | PROJECT |               |
| 07 - Operational System Development                 | 0708612F Computer Resources Support Improvement  | 674851  |               |
| Program   |  |         |               |
| (U) A. Mission Description Continued                |  |         |               |
| (U) FY 2001 (\$ in Thousands) Continued             | <p>aging/obsolete on-board aerospace computers by replacing them with commercial microprocessor-based computer emulation technology; providing for backward compatibility with existing mission critical software and allowing for incremental software upgrades on new Commercial-Off-The-Shelf (COTS) processors.</p> <p>Continue Real-Time Defense Information Infrastructure Common Operating Environment (RT DII COE). The objective of RT DII COE is to extend the ideas for reuse and commonality to improve the effectiveness of systems performing real-time Command and Control (C2) missions. Our participation provides the RT DII COE effort with needed real-time embedded system experience, adds to the effectiveness of the Computer Resource Support Improvement Program's (CRSIP's) Weapon System Open Architecture (WSOA) project, and provides the Air Force Research Lab (AFRL) with on going technical information that will eventually apply to real-time aspects of all C2 programs.</p> <p>Continue Virtual Engineering Environment (VEE). The objective of VEE is to provide the DoD user with a low-cost, reconfigurable and scalable engineering environment; develops concepts and technologies, and employs common components aimed at significantly improving embedded software development and test, while at the same time, reducing facility acquisition and maintenance costs. VEE technologies and components will be applied to both current and next-generation weapon system software development and test environments. VEE will leverage off commercial hardware and software as well as build upon existing technologies previously developed and demonstrated under the Embedded Computer Resource (ECR) Support Improvement Program (ESIP) and CRSIP.</p> <p>Continue Weapon System Open Architecture (WSOA). Application of Open System Architecture (OSA) to embedded avionics applications is a key element of AFRL's strategy for future weapon systems development. Previous demonstrations supported by the DoD have shown the application of Ada 95, Object-Oriented methodology, and real-time distributed processing with open systems infrastructure to embedded avionics systems. WSOA represents the next logical extension by providing a bridge between embedded avionics and command and control computer and intelligence (C3I) systems with an open systems 'virtual backbone'.</p> <p>Total</p> |         |               |
| (U) \$2,356   |  |         |               |
| (U) B. Budget Activity Justification                | <p>This program is in Budget Activity 7, Operational System Development, because it provides support to operational systems.</p>   |         |               |

Project 674851

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Exhibit R-2 (PE 0708612F)

| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |   |          |          |          |          |          |          |            | DATE       | February 2000 |
|---|---|---|----------|----------|----------|----------|----------|----------|------------|------------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE                             |          |          | PROJECT  |          |          |          |            |            |               |
| 07 - Operational System Development                 |   | 0708612F Computer Resources Support Improvement |          |          | 674851   |          |          |          |            |            |               |
|   |   | Program   |          |          |          |          |          |          |            |            |               |
| (U)   | <b>C. Program Change Summary (\$ in Thousands)</b>  |   |          |          |          |          |          |          |            |            |               |
| (U)   | Previous President's Budget (FY 2000 PBR)   | FY 1999   | FY 2000  | FY 2001  |          |          |          |          |            | Total Cost |               |
| (U)   | Appropriated Value  | 0   | 0        | 0        |          |          |          |          |            | TBD        |               |
| (U)   | Adjustments to Appropriated Value   | 0   | 0        |          |          |          |          |          |            |            |               |
|   | a. Congressional/General Reductions   |   |          |          |          |          |          |          |            |            |               |
|   | b. Small Business Innovative Research   |   |          |          |          |          |          |          |            |            |               |
|   | c. Omnibus or Other Above Threshold Reprogram   |   |          |          |          |          |          |          |            |            |               |
|   | d. Below Threshold Reprogram  |   |          |          |          |          |          |          |            |            |               |
|   | e. Rescissions  |   |          |          |          |          |          |          |            |            |               |
|   | f. Other  |   |          |          |          |          |          |          |            |            |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR   |   |          | 2,356    |          |          |          |          |            |            |               |
| (U)   | Current Budget Submit/FY 2001 PBR   | 0   | 0        | 2,356    |          |          |          |          |            | TBD        |               |
| (U)   | <b>Significant Program Changes:</b>   |   |          |          |          |          |          |          |            |            |               |
|   | In FY 2001, funding was moved to this PE from PE 0708611F, Project 673090.                    |   |          |          |          |          |          |          |            |            |               |
| (U)   | <b>D. Other Program Funding Summary (\$ in Thousands)</b>                                     |   |          |          |          |          |          |          |            |            |               |
|   |   | FY 1999   | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to    | Total Cost |               |
|   | Actual  | Estimate  | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate | Complete   |            |               |
| (U)   | AF RDT&E  |   |          |          |          |          |          |          |            | 4,593      |               |
| (U)   | Other APPN  | 2,356   | 2,237    |          |          |          |          |          |            | 28,794     |               |
| (U)   | PE 0708611F/3080  | 9,377   | 19,417   |          |          |          |          |          |            | Continuing |               |
| (U)   | PE 0708611F/3400  |   |          |          |          |          |          |          |            | Continuing |               |
| (U)   | PE 0708612F/3080  |   |          | 2,288    | 2,341    | 2,394    | 2,445    | 2,500    | Continuing |            |               |
| (U)   | PE 0708612F/3400  |   |          | 13,877   | 14,099   | 14,386   | 14,667   | 14,957   | Continuing |            |               |
| (U)   | <b>E. Acquisition Strategy</b>  |   |          |          |          |          |          |          |            |            |               |
|   | All major contracts within this Program Element were awarded after full and open competition. |   |          |          |          |          |          |          |            |            |               |
| (U)   | <b>E. Schedule Profile</b>  |   |          |          |          |          |          |          |            |            |               |
|   |   | FY 1999   | FY 2000  |          |          |          |          |          |            |            |               |
|   |   |   |          |          |          |          |          |          |            |            |               |

Project 674851
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Exhibit R-2 (PE 0708612F)

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0708612F Computer Resources Support Improvement 674851

Program

(U) F. Schedule Profile Continued

|  | 1 | FY 1999 |   |   | 4 | 1 | FY 2000 |   |   | 4 | 1 | FY 2001 |   |   | 4 |
|--|---|---------|---|---|---|---|---------|---|---|---|---|---------|---|---|---|
|  |   | 2       | 3 | * |   |   | 2       | 3 |   |   |   | 2       | 3 |   |   |
| (U) Start Adaptive Software Flight Demonstration (ASFD)  |   |         |   |   |   |   |         |   |   |   |   |         |   |   |   |
| (U) ASFD Demo  |   |         |   |   |   | * |         |   |   |   |   |         |   |   |   |
| (U) Adaptive Software Technology Demos (ASTD)  |   |         |   |   | * |   |         |   |   |   |   |         |   | X |   |
| (U) Automated Operational Flight Program (OFP) Validation Demo   |   |         |   |   | * |   |         |   |   |   |   |         |   |   |   |
| (U) Start Embedded Information Systems Re-engineering (EISR)   |   |         |   |   |   |   |         |   |   |   |   |         |   |   |   |
| (U) EISR Demos   |   |         |   |   | * |   | X       |   |   |   |   |         |   |   |   |
| (U) Incremental Software Evolution for Real-Time (INSERT) Demos  |   |         |   |   | * |   |         | X |   |   |   |         |   |   |   |
| (U) Incremental Upgrade of Legacy Systems (IULS) Tech Demos  |   |         |   |   | * |   | X       |   |   | X |   |         |   | X |   |
| (U) Reconfigurable Aerospace Computer Emulator (RACE) Demos  |   |         |   |   | * |   |         |   |   | X |   |         |   | X |   |
| (U) Virtual Test Station (VTS) Demo  |   |         |   |   | * |   | X       |   |   |   |   |         |   |   |   |
| (U) Start Virtual Engineering Environment (VEE)  |   |         |   |   | * |   |         |   |   |   |   |         |   |   |   |
| (U) VEE Demos  |   |         |   |   |   |   |         |   |   | X |   |         |   | X |   |
| (U) Start Weapon System Open Architecture (WSOA)   |   |         |   |   | * |   |         |   |   |   |   |         |   |   |   |
| (U) WSOA Demo  |   |         |   |   |   |   |         |   |   |   |   |         |   |   | X |
| (U) Real-Time DII COE IPT Support  |   |         |   |   | * |   | X       |   | X | X |   | X       |   | X | X |
| DII COE IPT: Defense Information Infrastructure (DII) Common Operating Environment (COE) Integrated Product Team (IPT) |   |         |   |   | * |   |         |   |   |   |   |         |   |   |   |
| * denotes completed event  |   |         |   |   |   |   |         |   |   |   |   |         |   |   |   |
| X denotes planned event  |   |         |   |   |   |   |         |   |   |   |   |         |   |   |   |

Project 674851

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Exhibit R-2 (PE 0708612F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          | DATE                    | PROJECT            |
|--|---|---|--------------------------|-------------------------|--------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE                             |                          |                         |                    |
| 07 - Operational System Development                |   | 0708612F Computer Resources Support Improvement |                          | 674851                  |                    |
|  |   | Program   |                          |                         |                    |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)   |   |                          | FY 1999                 | FY 2000            |
| (U)  | Adaptive Software Technology Development  |   |                          |                         | 350                |
| (U)  | Incremental Upgrade of Legacy Systems Tech Demo   |   |                          |                         | 125                |
| (U)  | Reconfigurable Aerospace Computer Emulator  |   |                          |                         | 300                |
| (U)  | Real-Time Defense Information Infrastructure Common Operating Environment Integrated Process Team Support |   |                          |                         | 75                 |
| (U)  | Virtual Engineering Environment   |   |                          |                         | 636                |
| (U)  | Weapon System Open Architecture   |   |                          |                         | 870                |
| (U)  | Total   |   |                          |                         | 2,356              |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands)                                  |   |                          |                         |                    |
| (U)  | Performing Organizations:   |   |                          |                         |                    |
|  | Contractor or Government  | Contract Method/Type or Funding Vehicle         | Award or Obligation Date | Performing Activity EAC | Project Office EAC |
|  | SAIC  | DO  | Various                  | N/A                     | N/A                |
|  | TRW   | DO  | Various                  | N/A                     | N/A                |
|  | Boeing  | DO  | Various                  | N/A                     | N/A                |
|  | Lockheed-Martin   | DO  | Various                  | N/A                     | N/A                |
|  | Other (RT DII COE)  |   |                          | N/A                     | N/A                |
|  | Support and Management Organizations  |   |                          |                         |                    |
|  | Test and Evaluation Organizations   |   |                          |                         |                    |
|  |   |   |                          | Budget FY 1999          | Budget FY 2000     |
|  |   |   |                          | Total Prior to FY 1999  | Budget to Complete |
|  |   |   |                          | Office EAC              | Program            |
|  |   |   |                          | 436                     | Continuing         |
|  |   |   |                          | 200                     | Continuing         |
|  |   |   |                          | 1,270                   | Continuing         |
|  |   |   |                          | 375                     | Continuing         |
|  |   |   |                          | 75                      | Continuing         |
|  |   |   |                          |                         | TBD                |
|  |   |   |                          |                         | TBD                |
|  |   |   |                          |                         | TBD                |
|  |   |   |                          |                         | TBD                |
|  |   |   |                          |                         | TBD                |

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| <b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b> |                    |                            |                   |                   |                   | <b>DATE</b>  | <b>February 2000</b> | <b>PROJECT</b> |
|---|--------------------|----------------------------|-------------------|-------------------|-------------------|--|----------------------|----------------|
| <b>BUDGET ACTIVITY</b>  |                    | <b>PE NUMBER AND TITLE</b> |                   |                   |                   | <b>0708612F Computer Resources Support Improvement674851</b> |                      |                |
| <b>07 - Operational System Development</b>                    |                    | <b>Program</b>             |                   |                   |                   |  |                      |                |
| (U) <u>Government Furnished Property:</u>                     |                    |                            |                   |                   |                   |  |                      |                |
|   | <u>Contract</u>    |                            |                   |                   |                   |  |                      |                |
| <u>Item</u>   | <u>Method/Type</u> | <u>Award or</u>            | <u>Delivery</u>   |                   |                   |  |                      |                |
|   | <u>or Funding</u>  | <u>Obligation</u>          | <u>Date</u>       |                   |                   |  |                      |                |
| <u>Description</u>  | <u>Vehicle</u>     |                            |                   |                   |                   |  |                      |                |
| <u>Product Development Property</u>                           |                    |                            |                   |                   |                   |  |                      |                |
| <u>Support and Management Property</u>                        |                    |                            |                   |                   |                   |  |                      |                |
| <u>Test and Evaluation Property</u>                           |                    |                            |                   |                   |                   |  |                      |                |
| <u>Subtotals</u>  |                    |                            |                   |                   |                   |  |                      |                |
| Subtotal Product Development                                  |                    |                            |                   |                   |                   |  |                      |                |
| Subtotal Support and Management                               |                    |                            |                   |                   |                   |  |                      |                |
| Subtotal Test and Evaluation                                  |                    |                            |                   |                   |                   |  |                      |                |
| Total Project   |                    |                            |                   |                   |                   |  |                      |                |
|   |                    | Total Prior<br>to FY 1999  | Budget<br>FY 1999 | Budget<br>FY 2000 | Budget<br>FY 2001 | Budget to<br>Complete  | Total<br>Program     | TBD            |
|   |                    | Total Prior<br>to FY 1999  | Budget<br>FY 1999 | Budget<br>FY 2000 | Budget<br>FY 2001 | Budget to<br>Complete  | Total<br>Program     | TBD            |
|   |                    |                            |                   |                   | 2,356             | TBD  |                      |                |
|   |                    |                            |                   |                   | 2,356             | TBD  |                      |                |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |  |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|---|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE  |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |   | 0901218F Civilian Compensation Program   |                  |                  |                  |                  |                  |                  |                  | 674139     |               |
| COST (\$ in Thousands)                              |   | FY 1999 Actual   | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 674139  | Civilian Compensation Program   | 6,700  | 6,891            | 7,209            | 7,020            | 7,150            | 7,307            | 7,468            | 0                | TBD        |               |
|   | Quantity of RDT&E Articles  | 0  | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0          |               |
| (U)   | <b>A. Mission Description</b><br>This program element provides for payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to the Federal Employees Compensation Act (FECA) under Title 5 U.S.C., Chapter 81. The Department of Labor (DOL) administers this program and charges the Department of the Air Force for its employee costs; therefore, this is a MUST PAY bill for Air Force. The PE excludes manpower authorizations and costs. |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 1999 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$6,700   | Required to continue a program to compensate employees assigned to RDT&E facilities for worked-related injury or disease |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$6,700   | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2000 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$6,891   | Required to continue a program to compensate employees assigned to RDT&E facilities for worked-related injury or disease |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$6,891   | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | FY 2001 (\$ in Thousands)   |  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$7,209   | Required to continue a program to compensate employees assigned to RDT&E facilities for worked-related injury or disease |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | \$7,209   | Total  |                  |                  |                  |                  |                  |                  |                  |            |               |
| (U)   | <b>B. Budget Activity Justification</b><br>This Program Element (PE) is in Budget Activity 7 in support of payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to the Federal Employees Compensation Act (FECA) under Title 5 U.S.C., Chapter 81.   |  |                  |                  |                  |                  |                  |                  |                  |            |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |  |  |          |          | DATE       | February 2000 |
|---|--|--|----------|----------|------------|---------------|
| BUDGET ACTIVITY                                     |  | PE NUMBER AND TITLE                    |          | PROJECT  |            |               |
| 07 - Operational System Development                 |  | 0901218F Civilian Compensation Program |          | 674139   |            |               |
| (U)   | C. Program Change Summary (\$ in Thousands)        |  |          |          |            |               |
| (U)   | Previous President's Budget (FY 2000 PBR)          | FY 1999                                | FY 2000  | FY 2001  | Total Cost | TBD           |
| (U)   | Appropriated Value                                 | 6,737                                  | 6,973    | 7,210    |            |               |
| (U)   | Adjustments to Appropriated Value                  | 6,756                                  | 6,973    |          |            |               |
| (U)   | a. Congressional/General Reductions                | -19                                    |          |          |            |               |
| (U)   | b. Small Business Innovative Research              |  | -38      |          |            |               |
| (U)   | c. Omnibus or Other Above Threshold Reprogram      |  | -44      |          |            |               |
| (U)   | d. Below Threshold Reprogram                       | -37                                    |          |          |            |               |
| (U)   | e. Rescissions                                     |  |          |          |            | TBD           |
| (U)   | f. Other   |  |          |          |            |               |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR      |  |          | -1       |            |               |
| (U)   | Current Budget Submit/FY 2001 PBR                  | 6,700                                  | 6,891    | 7,209    |            | TBD           |
| (U)   | Significant Program Changes:                       |  |          |          |            |               |
| (U)   | N/A  |  |          |          |            |               |
| (U)   | D. Other Program Funding Summary (\$ in Thousands) |  |          |          |            |               |
|   |  | FY 1999                                | FY 2000  | FY 2001  | Cost to    | Total Cost    |
|   |  | Actual                                 | Estimate | Estimate | Complete   |               |
| (U)   | AF RDT&E   |  |          |          |            |               |
| (U)   | Other APPN   |  |          |          |            |               |
| (U)   | Operation and Maintenance                          | 22,355                                 | 22,679   | 25,759   | 27,860     | 0             |
| (U)   | E. Acquisition Strategy                            |  |          |          |            |               |
| (U)   | N/A  |  |          |          |            |               |
| (U)   | F. Schedule Profile                                |  |          |          |            |               |
|   |  | FY 1999                                | FY 2000  | FY 2001  |            |               |
|   |  | 1                                      | 2        | 3        | 4          | 1             |
|   |  |  |          |          |            | 2             |
|   |  |  |          |          |            | 3             |
| (U)   | N/A  |  |          |          |            | 4             |
| Project 674139                                      |  | Exhibit R-2 (PE 0901218F)              |          |          |            |               |
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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  |   |                          |                         |                        |                        |                |                |                    | DATE               | February 2000 |         |         |
|--|--|---|--------------------------|-------------------------|------------------------|------------------------|----------------|----------------|--------------------|--------------------|---------------|---------|---------|
| BUDGET ACTIVITY                                    |  | PE NUMBER AND TITLE                     |                          |                         |                        |                        |                |                |                    | PROJECT            |               |         |         |
| 07 - Operational System Development                |  | 0901218F Civilian Compensation Program  |                          |                         |                        |                        |                |                |                    | 674139             |               |         |         |
| (U)  | A. Project Cost Breakdown (\$ in Thousands)                              |   |                          |                         |                        |                        |                |                |                    |                    | FY 1999       | FY 2000 | FY 2001 |
| (U)  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
| (U)  | Total  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
| (U)  | B. Budget Acquisition History and Planning Information (\$ in Thousands) |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
| (U)  | Performing Organizations:  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Contractor or Government Performing Activity                             | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity EAC | Project Office EAC     | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001     | Budget to Complete | Total Program |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Product Development Organizations  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Support and Management Organizations                                     |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Test and Evaluation Organizations  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
| (U)  | Government Furnished Property:   |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Contract   | Method/Type or Funding Vehicle          | Award or Obligation Date | Delivery Date           | Total Prior to FY 1999 | Budget FY 1999         | Budget FY 2000 | Budget FY 2001 | Budget to Complete | Total Program      |               |         |         |
|  | Item Description   |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Product Development Property   |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Support and Management Property  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | Test and Evaluation Property   |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |
|  | n/a  |   |                          |                         |                        |                        |                |                |                    |                    |               |         |         |

Project 674139

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Exhibit R-3 (PE 0901218F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |  | DATE                      | February 2000 |
|--|--|---------------------------|---------------|
| BUDGET ACTIVITY                                    | PE NUMBER AND TITLE                    | PROJECT                   |               |
| 07 - Operational System Development                | 0901218F Civilian Compensation Program | 674139                    |               |
| Subtotals  | Total Prior                            | Budget                    | Total         |
| NA   | to FY 1999                             | FY 1999                   | Program       |
| Subtotal Product Development                       |  | FY 2000                   |               |
| Subtotal Support and Management                    |  | FY 2001                   |               |
| Subtotal Test and Evaluation                       |  | Complete                  |               |
| Total Project                                      |  |                           |               |
|  |  |                           | TBD           |
| Project 674139                                     |  | Exhibit R-3 (PE 0901218F) |               |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |                            |                     |                  |                  |                  |                  |                  |                  |                  | DATE       | February 2000 |
|---|----------------------------|---------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |                            | PE NUMBER AND TITLE |                  |                  |                  |                  |                  |                  |                  | PROJECT    |               |
| 07 - Operational System Development                 |                            | 1001018F NATO AGS   |                  |                  |                  |                  |                  |                  |                  | 670002     |               |
| COST (\$ in Thousands)                              |                            | FY 1999 Actual      | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |               |
| 670002  | NATO JSTARS                | 2,685               | 0                | 3,270            | 0                | 0                | 0                | 0                | 0                | TBD        |               |
|   | Quantity of RDT&E Articles | 0                   | 0                | 0                | 0                | 0                | 0                | 0                | 0                | TBD        |               |

Note: On 29 October 1999 the Air Force informed Congress of intentions for an FY99 New Start: the NATO Airborne Ground Surveillance, for the NATO Alliance Ground Surveillance (AGS) requirement. The Air Force intends to use \$.477 million, FY99 RDT&E remaining in the NATO Joint STARS line. The Air Force will support a Below Threshold Reprogramming of \$.1.6 million FY00 RDT&E.

(U) **A. Mission Description**  
 The NATO Staff Requirement (NSR) for an Alliance Ground Surveillance (AGS) System, Sep 97, states the requirement for a NATO owned and operated capability to '...detect, locate, recognize and track specified activities on and near the surface and disseminate related data in timely manner, and thereby contribute to the successful accomplishment of the NATO military operations....' In Nov 97 the NATO Conference of National Armaments Directors (CNAD) rejected a US 'fast track' offer of the US JSTARS system to meet the AGS requirement, and directed the AGS Provisional Project Structure (PPS) to look at fresh options to satisfy the requirement. In Dec 97 the US offered the JSTARS Radar Technology Insertion Program (RTIP) advanced sensor on a platform of NATO's choice. In Apr 98 the CNAD endorsed the PPS recommendation for conducting a one year Concept Definition Study (CDS) led by the Provisional Project Office (PPO). The US led the airborne portion of the CDS and presented a study based on the US RTIP advanced sensor system. In May 99 the CNAD authorized entrance into a 2-year, RTIP-based, project definition phase for interested nations, based on a proposal by Norway. This project definition effort has been named the Trans-Atlantic Advanced Radar Project (TARP) and formal designation as a NATO Project has been requested. Nations that have agreed to participate in this effort to date are: US, Canada, Norway, Denmark, and Belgium. All NATO nations have been encouraged to join the effort and several have indicated interest in joining. In Aug 99 USD/AT&L directed the Air Force to be lead service, with support of the Army, in carrying out overall US participation in this project and to be specifically responsible for the Air Segment. The Air Force plans to support the effort through participation in a Project Definition Office (PDO) in Brussels, BE. The objective of the Project Definition effort is to prepare an international agreement, a program charter, and a request for proposal for a fully integrated and interoperable NATO owned and operated airborne ground surveillance system. Standup of the PDO is expected in Feb 00 and its work will last for approximately two years. To initiate the activity the Air Force plans to use \$.477 million FY99 RDT&E funds remaining in the NATO Joint STARS line. The FY00 effort will be supported by a below threshold reprogramming action.

(U) **FY 1999 (\$ in Thousands)**  
 (U) \$380 NATO Studies  
 (U) \$1,808 Other Government Costs  
 (U) \$20 Provisional Program Office Support  
 (U) \$477 Project Definition Office Support (New Start pending with Congress; letter notification)

Project 670002

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Exhibit R-2 (PE 1001018F)

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)  |                          |               | DATE              | February 2000             |
|--|--------------------------|---------------|-------------------|---------------------------|
| BUDGET ACTIVITY  | PE NUMBER AND TITLE      | PROJECT       |                   |                           |
| <b>07 - Operational System Development</b>   | <b>1001018F NATO AGS</b> | <b>670002</b> |                   |                           |
| (U) <b>A. Mission Description Continued</b>  |                          |               |                   |                           |
| (U) FY 1999 (\$ in Thousands) Continued  |                          |               |                   |                           |
| (U) \$2,685 Total  |                          |               |                   |                           |
| (U) FY 2000 (\$ in Thousands)  |                          |               |                   |                           |
| (U) \$0 The Air Force plans a Below Threshold Reprogramming action, upon Congressional approval of the FY99 New Start Request, to add 1,600 for support for the operations of the PDO, and other NATO studies as required. |                          |               |                   |                           |
| (U) \$0 Total  |                          |               |                   |                           |
| (U) FY 2001 (\$ in Thousands)  |                          |               |                   |                           |
| (U) \$3,270 Project Definition Office support and support NATO interoperability studies and efforts  |                          |               |                   |                           |
| (U) \$3,270 Total  |                          |               |                   |                           |
| (U) <b>B. Budget Activity Justification</b>  |                          |               |                   |                           |
| This program is in Budget Activity 7, Operational System Development because it involves the modification of radar sensor technology currently fielded.  |                          |               |                   |                           |
| (U) <b>C. Program Change Summary (\$ in Thousands)</b>   |                          |               |                   |                           |
| (U) Previous President's Budget (FY 2000 PBR)  | FY 1999                  | FY 2000       | FY 2001           | Total Cost                |
| (U) Appropriated Value   | 0                        | 0             | 0                 | TBD                       |
| (U) Adjustments to Appropriated Value  |                          |               |                   |                           |
| a. Congressional/General Reductions  | -15                      |               |                   |                           |
| b. Small Business Innovative Research  |                          |               |                   |                           |
| c. Omnibus or Other Above Threshold Reprogram  |                          |               |                   |                           |
| d. Below Threshold Reprogram   | 2,700                    |               |                   |                           |
| e. Rescissions   |                          | 0             |                   |                           |
| f. Other   |                          | 0             |                   |                           |
| (U) Adjustments to Budget Years Since FY 2000 PBR  |                          |               | 3,270             | TBD                       |
| (U) Current Budget Submit/FY 2001 PBR  |                          | 0             | 3,270             | TBD                       |
| (U) <b>Significant Program Changes:</b>  |                          |               |                   |                           |
| A Below Threshold Reprogramming is planned to add 1,600 to FY00, for the Air Force share of support to operations of the PDO. Funding in FY01 added by DOD direction.  |                          |               |                   |                           |
| Project 670002   |                          |               | Page 2 of 5 Pages | Exhibit R-2 (PE 1001018F) |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit) |   |                     |          |          |          |          |          |          |                  | DATE       | February 2000 |
|---|---|---------------------|----------|----------|----------|----------|----------|----------|------------------|------------|---------------|
| BUDGET ACTIVITY                                     |   | PE NUMBER AND TITLE |          |          |          |          |          |          |                  | PROJECT    |               |
| 07 - Operational System Development                 |   | 1001018F NATO AGS   |          |          |          |          |          |          |                  | 670002     |               |
| (U)   | D. Other Program Funding Summary (\$ in Thousands)  | FY 1999             | FY 2000  | FY 2001  | FY 2002  | FY 2003  | FY 2004  | FY 2005  | Cost to Complete | Total Cost |               |
|   |   | Actual              | Estimate | Estimate | Estimate | Estimate | Estimate | Estimate |                  |            |               |
| (U)   | AF RDT&E  |                     |          |          |          |          |          |          |                  |            |               |
| (U)   | Other APPN  |                     |          |          |          |          |          |          |                  |            |               |
|   | N/A   |                     |          |          |          |          |          |          |                  |            |               |
| (U)   | E. Acquisition Strategy   |                     |          |          |          |          |          |          |                  |            |               |
|   | The U.S. and four other NATO nations (Canada, Belgium, Denmark, and Norway) are participating in a Project Definition effort for a NATO owned and operated ground surveillance capability, based on the US JSTARS Radar Technology Insertion Program (RTIP) advanced radar. The Project Definition work is expected to conclude in 2002, and is expected to produce documentation to be presented to NATO nations necessary for a decision on whether to proceed with acquisition of an airborne ground surveillance system based on this effort. |                     |          |          |          |          |          |          |                  |            |               |
| (U)   | E. Schedule Profile   |                     |          |          |          |          |          |          |                  |            |               |
|   |   | FY 1999             |          | FY 2000  |          | FY 2001  |          |          |                  |            |               |
|   |   | 1                   | 2        | 3        | 4        | 1        | 2        | 3        | 4                |            |               |
| (U)   | CNAD authorization, start of RTIP- based Project Definition effort  |                     |          |          |          |          |          |          |                  |            |               |
| (U)   | Standup of Project Definition Office  |                     |          |          |          |          |          |          |                  |            |               |
|   | * - Denotes Completed Event   |                     |          |          |          |          |          |          |                  |            |               |
|   | X- Denotes Planned Event  |                     |          |          |          |          |          |          |                  |            |               |

Project 670002

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Exhibit R-2 (PE 1001018F)

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |   |                          |                     |                    |                        |                |                |                | DATE   | February 2000 |
|--|---|---|--------------------------|---------------------|--------------------|------------------------|----------------|----------------|----------------|--|---------------|
| BUDGET ACTIVITY                                    |   |   |                          |                     |                    |                        |                |                |                | PROJECT  | 670002        |
| 07 - Operational System Development                |   |   |                          |                     |                    |                        |                |                |                | PE NUMBER AND TITLE<br>1001018F NATO AGS       |               |
| (U)  | <b>A. Project Cost Breakdown (\$ in Thousands)</b>  |   |                          |                     |                    |                        |                |                |                |  |               |
| (U)  | NATO Studies  |   |                          |                     |                    |                        |                |                |                | FY 1999  | FY 2000       |
| (U)  | Other Government Costs  |   |                          |                     |                    |                        |                |                |                | 380  | 0             |
| (U)  | Provisional Project Office Support  |   |                          |                     |                    |                        |                |                |                | 1,808  |               |
| (U)  | Project Definition Office Support and NATO Interoperability studies and efforts   |   |                          |                     |                    |                        |                |                |                | 20   |               |
| (U)  | Total   |   |                          |                     |                    |                        |                |                |                | 477  | 3,270         |
|  | NOTE: For FY00 RDT&E, a Below Threshold Reprogramming action is planned to add 1,600 to be used for Project Definition Office support |   |                          |                     |                    |                        |                |                |                |  | 3,270         |
| (U)  | <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>   |   |                          |                     |                    |                        |                |                |                |  |               |
| (U)  | <b>Performing Organizations:</b>  |   |                          |                     |                    |                        |                |                |                |  |               |
|  | Contractor or Government Performing Activity  | Contract Method/Type or Funding Vehicle | Award or Obligation Date | Performing Activity | Project Office EAC | Total Prior to FY 1999 | Budget FY 1999 | Budget FY 2000 | Budget FY 2001 | Budget to Complete                             | Total Program |
| <b>Product Development Organizations</b>           |   |   |                          |                     |                    |                        |                |                |                |  |               |
|  | Northrop Grumman  | IDIQ                                    | Apr 96                   | 2,376               | 2,376              | 2,376                  |                |                |                |  | 2,376         |
|  | Rome Labs   | Fixed Price                             | Sep 96                   | 485                 | 485                | 485                    |                |                |                |  | 485           |
|  | Northrop Grumman  | IDIQ                                    | Jan 97                   | 3,782               | 3,782              | 3,782                  |                |                |                |  | 3,782         |
|  | Northrop Grumman  | IDIQ                                    | Dec 97                   | 637                 | 637                | 637                    |                |                |                |  | 637           |
|  | Northrop Grumman  | IDIQ                                    | May 98                   | 944                 | 944                | 944                    |                |                |                |  | 944           |
|  | Northrop Grumman  | IDIQ                                    | Sep 98                   | 1,404               | 1,404              | 1,404                  |                |                |                |  | 1,404         |
|  | Northrop Grumman  | IDIQ                                    | Dec 98                   | 47                  | 47                 | 47                     |                |                |                |  | 47            |
|  | Northrop Grumman  | IDIQ                                    | May 99                   | 520                 | 520                | 140                    | 380            |                | 3,270          |  | 520           |
|  | Project Development Office  |   |                          |                     |                    |                        | 477            |                |                |  | 3,747         |
| <b>Support and Management Organizations</b>        |   |   |                          |                     |                    |                        |                |                |                |  |               |
|  | ESC (Provisional Project Office)  |   |                          |                     |                    | 4                      | 20             |                |                | 0  | 24            |
|  | Mitre   | Cost Plus                               | Oct 94/                  |                     |                    | 1,704                  | 1,371          |                |                | 0  | 3,075         |
|  |   | Award Fee                               | Jun 96                   |                     |                    |                        |                |                |                |  |               |
|  | TEMS  | IDIQ                                    | Mar - May                |                     |                    | 2,255                  | 337            |                |                | 0  | 2,592         |
| Project 670002                                     |   |   |                          |                     |                    |                        |                |                |                | Page 4 of 5 Pages<br>Exhibit R-3 (PE 1001018F) |               |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |   |                     |                           | DATE              | February 2000     |
|--|---|---------------------|---------------------------|-------------------|-------------------|
| BUDGET ACTIVITY                                    |   | PE NUMBER AND TITLE |                           | PROJECT           |                   |
| 07 - Operational System Development                |   | 1001018F NATO AGS   |                           | 670002            |                   |
| (U)  | Performing Organizations Continued:<br>Support and Management Organizations |                     | 96                        |                   |                   |
|  | Miscellaneous   | Various             | 800                       | 100               | 0                 |
|  | Test and Evaluation Organizations   |                     |                           |                   |                   |
|  | Subtotals   |                     | Total Prior<br>to FY 1999 | Budget<br>FY 1999 | Budget<br>FY 2000 |
|  | Subtotal Product Development  |                     | 9,815                     | 857               |                   |
|  | Subtotal Support and Management   |                     | 4,763                     | 1,828             | 0                 |
|  | Subtotal Test and Evaluation  |                     |                           |                   |                   |
|  | Total Project   |                     | 14,578                    | 2,685             | 0                 |
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|---|--|-------------------|--|------------------|---------------------|
| 1. COMPONENT<br><br><b>AIR FORCE<br/>(AFMC)</b>   | FY 2000 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                   |  | 2. DATE          |                     |
| 3. INSTALLATION AND LOCATION<br><br><b>KIRTLAND AIR FORCE BASE, NEW MEXICO</b>  |  |                   | 4. PROJECT TITLE<br><br><b>Minor Construction &lt; \$500,000</b> |                  |                     |
| 5. PROGRAM ELEMENT<br><br>62601F  | 6. CATEGORY CODE   | 7. PROJECT NUMBER | 8. PROJECT COST (\$000)<br><br>660.0                             |                  |                     |
| 9. COST ESTIMATES   |  |                   |  |                  |                     |
| <b>ITEM</b>   |  | <b>U/M</b>        | <b>QUANTITY</b>  | <b>UNIT COST</b> | <b>COST (\$000)</b> |
| Minor Construction using RDT&E funds for FY2000   |  |                   |  |                  |                     |
| Construct SCIF Area, Building 497   |  | LS                |  |                  | 350                 |
| Construct SCIF Area, Building 914   |  | LS                |  |                  | 100                 |
| Install Animal Barriers   |  | LS                |  |                  | 30                  |
| Add Lab Space, Building 362   |  | LS                |  |                  | 150                 |
| Construct Parking Area  |  | LS                |  |                  | 30                  |
|   |  |                   |  |                  | 660                 |
| <b>10. DESCRIPTION OF PROPOSED WORK</b> Construct Sensitive Compartmented Information Facilities (SCIF) in building 497 and 914, install animal barriers around building 427, alter an area in building 362 for R&D lab space, and construct additional asphalt parking area for building 760.  |  |                   |  |                  |                     |
| <b>11. REQUIREMENT:</b> Unspecified Minor Construction (13.15.4).<br><br><b>PROJECT:</b> Multiple projects as described above.<br><br><b>REQUIREMENT:</b> Additional SCIF space is required to support the DE Headquarters and the DE Satellite Assessment Center, animals living under the building must be kept out of the work area, additional lab space is needed to support classified S&T work, additional parking is needed to replace the spaces lost as a result of construction of a new facility sited in a portion of the parking lot.<br><br><b>CURRENT SITUATION:</b> Adequate SCIF space is not available, animals enter the facility from areas they inhabit under the floor, additional lab space is not available, and parking area can not handle the parking load of the facility.<br><br><b>IMPACT IF NOT PROVIDED:</b> Some classified work may be delayed or executed in a shared SCIF. Animals will continue to enter the facility disrupting the work environment. Classified lab work will not be accomplished possibly delaying some S&T programs. Cars will continue to part illegally with increased potential for vehicle accidents. |  |                   |  |                  |                     |

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| 1. COMPONENT<br><b>AIR FORCE<br/>(AFMC)</b>  |                                 | FY 2000 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                      |  | 2. DATE      |  |
| 3. INSTALLATION AND LOCATION<br><b>ROME LAB, NEW YORK</b>  |                                 |  |                                      | 4. PROJECT TITLE<br><b>Minor Construction &lt; \$500,000</b> |              |  |
| 5. PROGRAM ELEMENT<br><br>62702F   | 6. CATEGORY CODE<br><br>610-281 | 7. PROJECT NUMBER<br><br>ULDF93002P2                               | 8. PROJECT COST (\$000)<br><br>465.0 |  |              |  |
| 9. COST ESTIMATES  |                                 |  |                                      |  |              |  |
| ITEM   |                                 | U/M  | QUANTITY                             | UNIT COST  | COST (\$000) |  |
| Minor Construction using RDT&E funds for FY2000:<br><br>Upgrade Research Engineering Area, Bldg 106  |                                 | LS   |                                      |  | 465.0        |  |
| <b>10. DESCRIPTION OF PROPOSED WORK:</b> This is a quality of life improvement for the Sensors Directorate offices in Building 106. Improvements include: replacement of existing asbestos cement partitions with a nonasbestos wall system, replacement of obsolete building systems including electrical distribution, lighting, suspended ceilings, fire detection and protection systems.  |                                 |  |                                      |  |              |  |
| <b>11. REQUIREMENT:</b> Unspecified Minor Construction (13.15.4).<br><b>PROJECT:</b> Upgrade Research Engineering Area, Bldg 106<br><br><b>REQUIREMENT:</b> Rome Research Site facilities require modern laboratory and professional office facilities to accomplish its mission.<br><br><b>CURRENT SITUATION:</b> Building 106 was originally built in 1943 and renovated into a laboratory in 1952, virtually no changes other than painting have occurred since. Facilities are substandard, inefficient, and outmoded by today's standards, which seriously impacts on their safety, efficiency, productivity, and denies personnel the benefit of a modern quality office/lab facility which meets AF standards.<br><br><b>IMPACT IF NOT PROVIDED:</b> The office power systems consist of 1950's vintage open bussways which pose a potential electrocution hazard to personnel, and are subject to frequent outages due to overloading will continue. All of the walls are constructed of asbestos cement partitions, and the areas above the ceilings contain friable asbestos material, whenever any minor work is accomplished, the area has to be evacuated causing lengthy unscheduled work stoppages in emergencies and scheduled work stoppages in non-emergencies |                                 |  |                                      |  |              |  |

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| 1. COMPONENT<br><br><b>AIR FORCE</b>  | FY 2000 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                     |  | 2. DATE      |
| 3. INSTALLATION AND LOCATION<br><br>EDWARDS AIR FORCE BASE, CALIFORNIA  |  |                                     | 4. PROJECT TITLE<br><br>AIRBORNE LASER COMPLEX UPGRADE |              |
| 5. PROGRAM ELEMENT<br><br>6.33.19F  | 6. CATEGORY CODE<br><br>311-114                                    | 7. PROJECT NUMBER<br><br>FSPM981305 | 8. PROJECT COST (\$000)<br><br>6,845.1                 |              |
| 9. COST ESTIMATES   |  |                                     |  |              |
| ITEM  | U/M  | QUANTITY                            | UNIT COST  | COST (\$000) |
| AIRBORNE LASER COMPLEX UPGRADE  |  |                                     |  | 5,171.5      |
| CONSTRUCT GROUND PRESS RECOV ASSY AREA  | LS   |                                     |  | ( 621.0)     |
| FACILITY UPGRADES (B151, 369, 370)  | LS   |                                     |  | (1,948.0)    |
| CONSTRUCT SYSTEMS INTEGRATION LAB   | LS   |                                     |  | (2,602.5)    |
| SUPPORTING FACILITIES   | LS   |                                     |  | 699.0        |
| CONSTRUCT FUEL FARM SYSTEM  | LS   |                                     |  | ( 431.0)     |
| CONSTRUCT NEUTRALIZATION SYSTEM   | LS   |                                     |  | ( 268.0)     |
| SUBTOTAL  |  |                                     |  | 5,870.5      |
| CONTINGENCY (10%)   |  |                                     |  | 587.1        |
| TOTAL CONTRACT COST   |  |                                     |  | 6,457.6      |
| SUPERVISION, INSPECTION, AND OVERHEAD (6%)  |  |                                     |  | 387.5        |
| TOTAL FUNDED COST   |  |                                     |  | 6845.1       |
| <b>10. DESCRIPTION OF PROPOSED WORK:</b> Modify Birk Flight Test Facility to accommodate ABL test and R&D equipment. Work includes infrastructure for a Ground Pressure Recovery Assembly (GPRA), Systems Integration Lab (SIL), and associated facility upgrades at B151. Construct infrasturcture for a laser fuel farm, and a neutralization subsystem at B369 and B370. (AFI 65-601, Chapter 13.15.5 Contractor Facility)   |  |                                     |  |              |
| <b>11. REQUIREMENT:</b> As Required<br><b>PROJECT:</b> Modify existing Birk Flight Test Facility (BFTF) (Building 151and associated areas) and install necessary R&D equipment to support the Program Definition Risk Reduction (PDRR) Airborne Laser (ABL) RDT&E program.<br><b>REQUIREMENT:</b> The PDRR ABL program is designed to exploit powerful technologies which have evolved over the past 20 years and integrate them into a revolutionary airborne weapon system which is lethal to boosting enemy Theater Ballistic Missiles (TBMs) at extremely long ranges. The ABL also plays a significant role in assisting the other joint tiers in the Theater Missile Defense architecture by reducing the number of targets, providing missile trajectory information to the theater point defenses, and identifying TBM launch points for counter force strikes against mobile launchers. Test facilities must be capable of supporting a test program that integrates a multi megawatt chemical oxygen iodine laser (COIL) and beam control system with a large aperture telescope into a Boeing 747 400F aircraft. Since the PDRR ABL aircraft will be a first-of-its-kind, modifications and equipment installation will be designed and modified as the program proceeds. With the facility capabilities of BFTF, building a new temporary facility for the PDRR ABL is an unnecessary expense.<br><b>CURRENT SITUATION:</b> Current BFTF facilities were designed to support wide body aircraft like the Boeing 747-400F. However, limited facility infrastructure modifications are needed to support the weapon |  |                                     |  |              |

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| 1. COMPONENT<br><br>AIR FORCE   | FY 2000 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) | 2. DATE                             |
| 3. INSTALLATION AND LOCATION<br><br>EDWARDS AIR FORCE BASE, CALIFORNIA  |  |                                     |
| 4. PROJECT TITLE<br><br>AIRBORNE LASER COMPLEX UPGRADE  |  | 5. PROJECT NUMBER<br><br>FSPM981305 |
| <p>test and operation of high energy laser systems and laboratory equipment in the SIL. The exterior apron site chosen to mount a pressure recovery system, designed to simulate PDRR ABL operating altitudes, lacks utility support. B369 and B370 lack infrastructure to support a laser fuel farm or a neutralization system. Upgrades to these facilities are necessary to support the ABL development.</p> <p><b><u>IMPACT IF NOT PROVIDED:</u></b> Testing and delivery of our nations next generation laser systems will be negatively impacted. Developmental milestones will not be met, resulting in higher costs to the contractor's overhead, daily operations, and increasing the taxpayer burden. Significant costs and schedule delays will be incurred if the government cannot provide the facilities required by the integration contractor. Existing contractor facilities are not sufficient to support the PDRR ABL.</p> <p><b><u>ADDITIONAL:</u></b> 10 USC 2351, 2353, and 2358 authorizes the use of RDT&amp;E funds to construct facilities necessary for the performance of a contract. This construction project supports the PDRR ABL integration contractor.</p> |  |                                     |

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| 1. COMPONENT<br><br><b>AIR FORCE<br/>(AFMC)</b>   |                                 | FY 2000 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                     |  | 2. DATE                 |  |
| 3. INSTALLATION AND LOCATION<br><br><b>EGLIN AIR FORCE BASE, FLORIDA</b>  |                                 |  |                                     | 4. PROJECT TITLE<br><br><b>Minor Construction &lt; \$500,000</b> |                         |  |
| 5. PROGRAM ELEMENT<br><br>65807F  | 6. CATEGORY CODE<br><br>312-477 | 7. PROJECT NUMBER<br><br>FTFA901200                                | 8. PROJECT COST (\$000)<br><br>30.0 |  |                         |  |
| 9. COST ESTIMATES   |                                 |  |                                     |  |                         |  |
| <b>ITEM</b>   |                                 | <b>U/M</b>   | <b>QUANTITY</b>                     | <b>UNIT<br/>COST</b>   | <b>COST<br/>(\$000)</b> |  |
| Minor Construction using RDT&E funds for FY2000:<br><br>FTFA901200 Commercial Water   |                                 | LS   |                                     |  | 30.0                    |  |
| 10. DESCRIPTION OF PROPOSED WORK: Install water line and fire hydrants  |                                 |  |                                     |  |                         |  |
| 11. REQUIREMENT: Unspecified Minor Construction (13.15.4).  |                                 |  |                                     |  |                         |  |
| <b>PROJECT:</b> Commercial Water Connection   |                                 |  |                                     |  |                         |  |
| <b>REQUIREMENT:</b> Provide reliable water source to test facility to support fire protection for high value equipment.             |                                 |  |                                     |  |                         |  |
| <b>CURRENT SITUATION:</b> Test Facility is currently fed by a small 3/4 inch line from an existing well and has no fire protection. |                                 |  |                                     |  |                         |  |
| <b>IMPACT IF NOT PROVIDED:</b> Potential loss of high value equipment due to fire.  |                                 |  |                                     |  |                         |  |

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| 1. COMPONENT<br><br><b>AIR FORCE<br/>(AFMC)</b>   | FY 2001 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                     |  | 2. DATE              |                         |
| 3. INSTALLATION AND LOCATION<br><br><b>WRIGHT-PATTERSON AIR FORCE BASE, OHIO</b>  |  |                                     | 4. PROJECT TITLE<br><br><b>Minor Construction &lt; \$500,000</b> |                      |                         |
| 5. PROGRAM ELEMENT<br><br>62102F  | 6. CATEGORY CODE   | 7. PROJECT NUMBER<br><br>ZHTV990043 | 8. PROJECT COST (\$000)<br><br>350.0                             |                      |                         |
| 9. COST ESTIMATES   |  |                                     |  |                      |                         |
| <b>ITEM</b>   |  | <b>U/M</b>                          | <b>QUANTITY</b>  | <b>UNIT<br/>COST</b> | <b>COST<br/>(\$000)</b> |
| Minor Construction using RDT&E funds for FY2001   |  |                                     |  |                      |                         |
| Alter Building 22B for Coatings Process Line  |  | LS                                  |  |                      | 350.0                   |
| <b>10. DESCRIPTION OF PROPOSED WORK:</b> Demolish existing interior walls, construct new interior walls, install coatings process line, fume hoods, exhaust fans, acid neutralization pit, deionized water unit, and all support utilities.   |  |                                     |  |                      |                         |
| <b>11. REQUIREMENT:</b> Unspecified Minor Construction (13.15.4).<br><br><b>PROJECT:</b> Alter Building 22B top support the new Coatings Process Line<br><br><b>REQUIREMENT:</b> A ground floor location is needed to accommodate the new coatings and corrosion control equipment and process line to provide a functional work flow for all R&D coatings and corrosion projects.<br><br><b>CURRENT SITUATION:</b> An existing coatings process line is located in a separate building above a basement work area and is not capable of integrating the new equipment and process into the existing line. Space to be vacated is needed to support the expansion of the Electrochemical Testing area.<br><br><b>IMPACT IF NOT PROVIDED:</b> The coating process line will continue to exist over the basement work area with the potential for a toxic spill to seep into the basement area creating a hazardous environment for the personnel. Critically needed space will not be available for other work units in the directorate. |  |                                     |  |                      |                         |

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| 1. COMPONENT<br><br><b>AIR FORCE<br/>(AFMC)</b>  | FY 2001 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                     |  | 2. DATE   |              |
| 3. INSTALLATION AND LOCATION<br><br><b>ROME LAB, NEW YORK</b>  |  |                                     | 4. PROJECT TITLE<br><br><b>Minor Construction &lt; \$500,000</b> |           |              |
| 5. PROGRAM ELEMENT<br><br>62702F   | 6. CATEGORY CODE<br><br>610-281                                    | 7. PROJECT NUMBER<br><br>ULDF950076 | 8. PROJECT COST (\$000)<br><br>350.0                             |           |              |
| 9. COST ESTIMATES  |  |                                     |  |           |              |
| ITEM   |  | U/M                                 | QUANTITY   | UNIT COST | COST (\$000) |
| Minor Construction using RDT&E funds for FY2001:<br><br>Upgrade Research Engineering Area, Bldg 104  |  | LS                                  |  |           | 350.0        |
| <p><b>10. DESCRIPTION OF PROPOSED WORK:</b> This is a quality of life improvement for the Sensors Directorate offices of the Photonics Center. Improvements include: The demolition of existing offices in the South end of the building, the construction of new perimeter partitions, replacement of obsolete building systems including electrical distribution, lighting, suspended ceilings, fire detection, and protection systems and the incorporation of systems furniture.</p> <p><b>11. REQUIREMENT:</b> Unspecified Minor Construction (13.15.4).</p> <p><b>PROJECT:</b> Upgrade Research Engineering Area, Bldg 104</p> <p><b>REQUIREMENT:</b> Rome Research Site facilities require modern laboratory and professional office facilities to accomplish its mission.</p> <p><b>CURRENT SITUATION:</b> This buildings facilities are outdated by today's standards. The current facility denies personnel the benefit of a modern office/lab.</p> <p><b>IMPACT IF NOT PROVIDED:</b> The Rome Research Site elements currently housed in Bldg 104 will continue to operate in substandard, inefficient, and outmoded facilities having impact on efficiency and productivity.</p> |  |                                     |  |           |              |



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|---|--|-------------------------------------|--|-----------|--------------|
| 1. COMPONENT<br><br>AIR FORCE<br>(AFMC)   | FY 2001 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                     |  | 2. DATE   |              |
| 3. INSTALLATION AND LOCATION<br><br>EDWARDS AIR FORCE BASE, CALIFORNIA  |  |                                     | 4. PROJECT TITLE<br><br>Minor Construction < \$500,000 |           |              |
| 5. PROGRAM ELEMENT<br><br>65807F  | 6. CATEGORY CODE<br><br>211-183                                    | 7. PROJECT NUMBER<br><br>FSPM992502 | 8. PROJECT COST (\$000)<br><br>495.5                   |           |              |
| 9. COST ESTIMATES   |  |                                     |  |           |              |
| ITEM  |  | U/M                                 | QUANTITY   | UNIT COST | COST (\$000) |
| Minor Construction using RDT&E funds for FY2001:<br><br>Multi Axis Thrust Stand (MATS) Pad 17   |  | SF                                  | 8,000  |           | 495.5        |
| 10. DESCRIPTION OF PROPOSED WORK: Construct a reinforced concrete Multi Axis Thrust Stand at Pad 17. Provide utilities to support remote electrical, fueling, and monitoring while test vehicle is on a raised stand. The test stand structure will be procured from NASA AMES at Moffett Field, CA.  |  |                                     |  |           |              |
| 11. REQUIREMENT: Unspecified Minor Construction (13.15.4).  |  |                                     |  |           |              |
| <p><b>PROJECT:</b> Construct MATS at Pad 17 .</p> <p><b>REQUIREMENT:</b> Construct a test stand capable of hoisting a test vehicle up to 50' above ground, with a capacity of 60 tons. A new control cab made of concrete masonry units to be placed near the pad. Concrete pad must be reinforced to withstand the weight and thrust of multiple test vehicles with no restrictions. A remotely operated system will monitor the system supplying fuel, electrical, and computer modeling information as testing progresses.</p> <p><b>CURRENT SITUATION:</b> A MATS stand exists at NASA AMES that is not being used. The stand could be transferred to Pad 17, where Dryden Flight Research Facility (DFRF), NASA or Joint Strike Fighter Task Force could utilize the facility in testing the new composite vehicles.</p> <p><b>IMPACT IF NOT PROVIDED:</b> Costs incurred in research and development will continue to rise. Benefits of knowledge gained from a multi-dimensional thrust exhaust nozzle could reduce costs following information gained utilizing the MATS stand at Pad 17.</p> |  |                                     |  |           |              |

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| 1. COMPONENT<br><br><b>AIR FORCE<br/>(AFMC)</b>  | FY 2001 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                |  | 2. DATE   |              |
| 3. INSTALLATION AND LOCATION<br><br><b>EGLIN AIR FORCE BASE, FLORIDA</b>   |  |                                | 4. PROJECT TITLE<br><br><b>Minor Construction &lt; \$500,000</b> |           |              |
| 5. PROGRAM ELEMENT<br><br>65807F   | 6. CATEGORY CODE<br><br>Multi                                      | 7. PROJECT NUMBER<br><br>Multi | 8. PROJECT COST (\$000)<br><br>820.0                             |           |              |
| 9. COST ESTIMATES  |  |                                |  |           |              |
| ITEM   |  | U/M                            | QUANTITY   | UNIT COST | COST (\$000) |
| Minor Construction using RDT&E funds for FY2001:   |  |                                |  |           |              |
| FTFA880252 Upgrade Test Project Building   |  | LS                             |  |           | 400.0        |
| FTFA971041 Construct Munitions Test Facility   |  | LS                             |  |           | 420.0        |
| Total FY2001 Minor Construction  |  |                                |  |           | 820.0        |
| 10. DESCRIPTION OF PROPOSED WORK: Expand existing facility to accommodate test mission and construct a new facility to replace existing munitions test trailers.   |  |                                |  |           |              |
| 11. REQUIREMENT: Unspecified Minor Construction (13.15.4).   |  |                                |  |           |              |
| <b>PROJECT:</b> Multiple Construction projects as described above  |  |                                |  |           |              |
| <b>REQUIREMENT:</b> Construction to add new bay for bathrooms and office areas, a new parking lot and loading ramp to accommodate additional munitions test personnel. Construct a new facility to replace three double-wide trailers to support munitions test personnel. |  |                                |  |           |              |
| <b>CURRENT SITUATION:</b> Existing facility cannot accommodate additional personnel and trailers are a very inefficient and costly alternative to a permanent facility.  |  |                                |  |           |              |
| <b>IMPACT IF NOT PROVIDED:</b> Test customers cannot be supported and munitions personnel will continue to operate out of inefficient trailer space.   |  |                                |  |           |              |

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|--|---------------------------------|--|--------------------------------------|--|----------|--------------|
| 1. COMPONENT<br><br>AIR FORCE<br>(AFMC)  |                                 | FY 2002 MILITARY CONSTRUCTION PROJECT DATA<br>(computer generated) |                                      |  | 2. DATE  |              |
| 3. INSTALLATION AND LOCATION<br><br>EDWARDS AIR FORCE BASE, CALIFORNIA   |                                 |  |                                      | 4. PROJECT TITLE<br><br>Minor Construction < \$500,000 |          |              |
| 5. PROGRAM ELEMENT<br><br>65807F   | 6. CATEGORY CODE<br><br>116-665 | 7. PROJECT NUMBER<br><br>FSPM982523                                | 8. PROJECT COST (\$000)<br><br>350.0 |  |          |              |
| 9. COST ESTIMATES  |                                 |  |                                      |  |          |              |
| ITEM   |                                 |  |                                      | U/M  | QUANTITY | COST (\$000) |
| Minor Construction using RDT&E funds for FY 2002:<br><br>Construct Joint Strike Force Harrier Pad  |                                 |  |                                      | LS   |          | 350.0        |
| 10. DESCRIPTION OF PROPOSED WORK: Construct concrete test pad  |                                 |  |                                      |  |          |              |
| 11. REQUIREMENT: Unspecified Minor Construction (13.15.4).<br><br><u>PROJECT:</u> Construct Joint Strike Force Harrier Test Pad<br><br><u>REQUIREMENT:</u> A Harrier type test pad is required to allow testing of the vertical take off capability of the new Joint Strike Fighter (JSF) aircraft while providing noise and blast attenuation.<br><br><u>CURRENT SITUATION:</u> There is no facility available to support this test requirement.<br><br><u>IMPACT IF NOT PROVIDED:</u> Lack of this mission critical capability will impede the successful testing of this state-of-the-art aircraft. |                                 |  |                                      |  |          |              |

COMBATING TERRORISM

| Research, Development, Test and Evaluation, AF   | FY98 | FY99 | FY00 | FY01 | FY02 | FY03 | FY04 | FY05 |
|--|------|------|------|------|------|------|------|------|
| BA: 5 - Engineering and Manufacturing Development<br>PE: 0604617 Agile Combat Support      | 1.1  | 2.3  | 0.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| BA: 7 - Operational System Development<br>PE: 0305128F Security & Investigative Activities | 3.3  | 1.3  | 1.4  | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  |
| <b>TOTAL COMPONENT</b>   | 4.4  | 3.6  | 1.4  | 1.2  | 0.5  | 0.5  | 0.5  | 0.5  |